ENVIRONMENTAL REPORTING AND THE IMPACTS OF MANDATORY REPORTING REQUIREMENTS

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

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January 2007

Declaration

I certify that:

a) Except where due acknowledgement has been made, the work is that of the author alone; and

b) The work has not been submitted previously, in whole or in part, to qualify for any other academic award;

c) The content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; and

d) Any editorial work, paid or unpaid, carried out by a third party is acknowledged.

Signed:

…….
Stacey Cowan
30 June 2007

Acknowledgements

As is the case with most theses, this one has not only impacted upon my life but also upon the lives of those around me. Leigh, my friend and partner, tolerated the tears and frustrations with a continuously loving, positive and supportive outlook. My children, Aedan and Niamh, have spent their primary school years in co-existence with this strange adult phenomenon known as a thesis. My newborn son Jacob spent the first nine months of his existence in front of a laptop as Mum wrote and, racing his impending birth, finalised a PhD. And, of course, my parents (Nev and Daph) and Leigh's parents (Rod and Bev) who provided me with the childcare and "free time" I needed to tackle those difficult moments without domestic and/or parental distractions. Then there are those special friends who provided support in a variety of mediums (in person, the end of the telephone or email) such as Lyn, Donna and Nicola who listened patiently to my wins and losses and, as a consequence, shared my happiness and tears. A big thanks to my colleagues (and friends) at work with whom there was many a "football huddle" on the verandah or under the tree where the topic was PhD/research-related, theirs and mine. Finally, to my supervisor Craig who during those moments of despair or euphoria was often also perceived, in my exhausted mind, as the principal cause of such despair or euphoria, but in reality taught me so much about research and writing and how to be a fabulous supervisor.

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Abstract

This thesis examines the strategic and potentially legitimising nature of voluntary environmental reporting. First, the thesis examines the relationship between emission levels on the National Pollutant Inventory and the quantity of total voluntary environmental disclosures, voluntary emission disclosures and positive voluntary environmental disclosures in annual reports. Second, an examination of changes in the quantity of disclosures discussing compliance with the National Pollutant Inventory and/or disclosures concerning pollution emissions is undertaken.

Taking into consideration the findings relating to the strategic nature of voluntary disclosures, the thesis then examines the potential of such disclosures to impact upon the usefulness of mandatory annual report disclosure requirements. This is undertaken by investigating whether significant differences exist between environmental disclosure practices in the voluntary sections of annual reports for corporations reporting non-compliance, and those not reporting non-compliance, in the directors' report pursuant with the requirements of s. 299(1)(f) of the Corporations Law.

The findings suggest that, for the sample corporations, a change in environmental regulation may have been an impetus for changes in voluntary environmental disclosure practices in annual reports. Disclosures are identified as being discretionary, and potentially reactive to changes in environmental regulation, with a significant increase in the quantity of voluntary disclosures relating to the National Pollutant Inventory and in the number of corporations making voluntary emission disclosures during the period. Hence, voluntary disclosures, although discretionary, may provide some indication of the corporation's actual environmental activities and provides some support for industry arguments to maintain a voluntary environmental disclosure system.

A comparison of the quantity and nature of voluntary disclosures for corporations required to report non-compliance with, and those reporting no non-compliance with, environmental

regulations in the directors' report found no significant differences in disclosure practices between the two groups; that is, in contrast to the findings of previous research, those reporting non-compliance had no higher propensity for either greater quantities of voluntary environmental disclosures or positive voluntary environmental disclosures. The findings suggest that the limitations faced by s. 299(1)(f) in its early years may have resulted in it not being perceived as a legitimacy threat by the sample corporations or as a lesser threat than others such as the NPI.

Therefore, questions remain as to whether the section is able to produce the outcomes proposed at its inception. Overall, taking into consideration the discretionary nature of voluntary environmental disclosures, and the limitations of s. 299(1)(f), concern remains as to the quality of the Australian annual report environmental reporting system and the potential for the existence of voluntary environmental disclosures in the annual report to reduce the usefulness of a mandatory disclosure system to users. These findings suggest a need for further research into the effect of both mandatory and voluntary environmental disclosures on users' perceptions of corporate environmental performance.

Chapter 1

INTRODUCTION

1.1 Background to the Research

The past four decades has seen an evolution in community and investor attitudes towards the environment in Australia (Australian Bureau of Statistics 2004; Ethical Investment Association 2004; Lothian 1994). This change has corresponded with an increase in environmental legislation within Australia and internationally (Australian Government 2006; Welford 1999; Bates 1995). The emergence, continuation and/or growth of environmental groups such as Greenpeace, the Australian Conservation Foundation and WWF during the last forty years have also provided a continuing emphasis on the importance of the environment. Such increases in community, investor and lobby group interest have resulted in increased pressure on corporations to improve environmental performance (Ethical Investment Association 2004; Wilmshurst & Frost 2000; Patten 1992).

Increased interest in corporate environmental performance has arguably led to an increase in the expected accountability of organisations to provide information about their environmental performance to a variety of stakeholder groups (Ethical Investment Association 2004; Tilt 1994; Welford 1994; Patten 1992). While social reporting by corporations has been noted over the past century (Guthrie & Parker 1989; Hogner 1982), environmental reporting in annual reports has generally been noted since the 1960's (Deegan & Gordon 1996; Guthrie & Parker 1989; Kelly 1981; Trotman & Bradley 1981). During this period there has been an

increase in the number of corporations disclosing and in the quantity of disclosures made by those corporations (Department of the Environment and Heritage 2005; KPMG 1999; Gray, Kouhy & Lavers 1995b; Trotman & Bradley 1981).

While an increase in environmental reporting in Australia has occurred (Department of the Environment and Heritage 2005; KPMG 1999; Deegan & Gordon 1996; Guthrie & Parker 1989; Kelly 1981; Trotman & Bradley 1981), the reporting system remains predominantly voluntary. Consequently, corporations can alter their reporting policies across time and, possibly, as a result of specific threats and opportunities. For example, corporations that have experienced a negative environmental event or unfavourable publicity concerning environmental performance have been found to provide higher quantities of disclosures in annual reports (Deegan & Rankin 1996). Increases in disclosures often occur following environmental or social disasters receiving adverse media attention (Deegan, Rankin & Voght 2000). Voluntary environmental disclosures tend to be predominantly positive in nature with little negative information included (Deegan, Rankin & Tobin 2002; Deegan, Rankin & Voght 2000; Deegan & Rankin 1996).

Previous research has argued that the use of environmental disclosures in annual reports may be economically beneficial to corporations particularly following a negative environmental event (Freedman & Patten 2004; Blacconiere & Northcutt 1997; Blacconiere & Patten 1994). While this may be favourable to the corporation, the quality of such disclosures has been questioned regarding issues such as credibility (Deegan & Gordon 1996; Deegan & Rankin 1996), usefulness (Hughes, Anderson & Golden 2001; Tilt 1994) and the potential to mislead (Deegan & Rankin 1996; Rockness 1985). Although improvements in some areas of disclosure practices have been noted in recent years, it is still suggested that voluntary disclosures do not necessarily provide an accurate account of actual environmental performance (Australian Consumers Association, Australian Conservation Foundation & Oxfam Community Aid Abroad 2004). Criticisms of the information provided by corporations on the environment led to requests for mandatory annual report disclosure requirements by researchers (Gray, Owen & Maunders 1987) and pressure groups (Tilt 1994).

As a possible consequence of increased community concern in relation to the environment and/or concerns relating to the quality of environmental reporting within a voluntary reporting regime (Deegan, Rankin & Voght 2000; Deegan & Rankin 1996) two mandatory environmental reporting requirements were introduced into the Australian corporate landscape

in 1998. The National Pollutant Inventory was developed by Environment Australia[1] to provide the community with a publicly available database of the pollution emissions of entities exceeding the specified emission thresholds. In addition, in 1998 the Australian *Corporations Law* (Cth) was amended to include section 299(1)(f) which requires disclosing corporations to include in the directors' report information regarding compliance with relevant state or Commonwealth environmental regulations. Many large corporations and various industry groups resisted both requirements maintaining that implementation would result in reduced competitive advantage and increased compliance costs (Parliamentary Joint Committee on Corporations and Securities 1999; National Environment Protection Council 1998). Furthermore, voluntary reporting was espoused as the preferred method on the basis that market forces would prompt improvements in this area (Parliamentary Joint Statutory Committee 1999). Both disclosure requirements remain in place at this time.

In Australian corporate history there has been a notable absence of mandated, *publicly* disclosed environmental performance information (such as pollution emission details) and *mandatory* environmental reporting requirements (such as mandated annual report disclosures). Much of the previous Australian research has examined the discretionary nature of voluntary environmental disclosures through changes in the quantity of environmental disclosures and/or the nature of such disclosures. There is, however, little research that has examined whether the introduction of an environmental regulation – in this case the introduction of the National Pollutant Inventory – acts as an impetus to changes in the *content* of annual report voluntary disclosures. Furthermore, due to a prior absence of legislated annual report environmental disclosure requirements, a comparative examination of annual report voluntary environmental disclosure practices for corporations compelled to disclose non-compliance, and those disclosing compliance, with environmental regulations has not been undertaken. A detailed review of the literature in the research area is provided in chapter 2.

1.2 Theoretical Perspective and Research Objectives

Legitimacy theory has been used extensively as an explanatory theory in the voluntary disclosure literature (Hedberg & Von Malmborg 2003; O'Dwyer 2003; Patten 2002b; Brown & Deegan 1998; O'Donovan 1999; Neu, Warsame & Pedwell 1998; Deegan & Gordon

[1] Now the Department of Environment and Heritage.

1996; Deegan & Rankin 1996; Patten 1991). Underlying legitimacy theory is the notion of the 'social contract' which exists between an organisation and the society in which that organisation exists and operates (Shocker & Sethi 1974). Organisational legitimacy is conferred by parties external to the organisation (Ashforth & Gibbs 1990; Dowling & Pfeffer 1975). If the norms and values of the organisation differ from the norms and values of the society in which that organisation operates, organisational legitimacy may be threatened (Lindblom 1994; Dowling & Pfeffer 1975) and a legitimacy gap may occur (Wartick & Mahon 1994). Under such circumstances the organisation may undertake activities in order to gain, maintain or repair legitimacy (O'Donovan 2002). While there are several strategies an organisation may adopt, the organisation must communicate its legitimating strategies to society (Dowling & Pfeffer 1975). It has been suggested that this has been achieved via voluntary disclosures in the corporation's annual report (Deegan, Rankin & Voght 2000; Brown & Deegan 1998; Li, Richardson & Thornton 1997; Blacconiere & Patten 1994; Patten 1992).

It may be argued that two potential or actual legitimacy threats to Australian corporations were introduced in 1998 – the National Pollutant Inventory (NPI) and s. 299(1)(f) of the *Corporations Law* (now the *Corporations Act 2001*). The NPI was established to improve public right-to-know regarding polluting activities of entities operating within Australia. The NPI was opposed by industry at its inception but is now well established as an annual reporting requirement. The amendment to include section 299(1)(f) in the Corporations Law was the subject of similar opposition and states that a company's directors' report for the financial year must:

> 'if the entity's operations are subject to any particular and significant environmental regulation under a law of the Commonwealth or of a State or Territory – give details of the entity's performance in relation to environmental regulation'.

Prior to the introduction of s. 299 (1)(f) annual report environmental disclosures were predominantly voluntary. The section compels corporations to disclose aspects of environmental performance information which may be negative in the directors' report of the company annual report. Therefore, in considering the potentially legitimising nature of the NPI and s. 299(1)(f), three principal research objectives are addressed in this thesis.

The first objectives of this research relate to the NPI and examine the potentially legitimising (and discretionary) nature of voluntary environmental disclosures by determining whether:

1. **a change in environmental regulation acts as an impetus to changes in voluntary environmental disclosure practices in annual reports of Australian companies.**

And, for comparison with previous research, principally that undertaken by Patten (2002b), if:

2. **there is a relationship between the quantity of published pollution emissions on the NPI and the quantity of voluntary environmental disclosure in annual reports of Australian corporations.**

The final research objective of this thesis relates to s. 299(1)(f) of the Corporations Act and examines whether:

3. **there are significant differences between environmental disclosure practices in the voluntary sections of Australian corporate annual reports for corporations reporting non-compliance, and those not reporting non-compliance, with environmental regulations in the directors' report pursuant to the requirements of section 299(1)(f).**

Objective 1 stems from the existing literature which provides evidence of the strategic and discretionary nature of voluntary environmental disclosures through a consideration of timing, quantity and nature of disclosures (Deegan, Rankin & Tobin 2002; Deegan, Rankin & Voght 2000; Brown & Deegan 1998; Deegan & Gordon 1996; Deegan & Rankin 1996). There is limited evidence, however, which investigates the impact of a particular event, such as the introduction of a new environmental regulation, on the *content* of voluntary annual report disclosures.

Objective 2 stems from the findings from a number of researchers who identified a propensity for corporations with what is deemed "poor" environmental performance to provide greater quantities of voluntary environmental disclosures (Al-Tuwaijri, Christensen & Hughes II 2004; Li, Richardson & Thornton 1997; Deegan & Rankin 1996). In particular, objective 2

provides a comparison with the research undertaken by Patten (2002b) who identified a positive relationship between levels of emission disclosures on the US Toxic Release Inventory and the quantity of environmental disclosures in 10k reports.

Objectives 1 and 2 will be addressed through the following five propositions:

P1a. Corporations with greater quantities of published pollution emissions, adjusted by size of corporation, on the National Pollutant Inventory have greater quantities of total voluntary environmental disclosures in annual reports.

P1b. Corporations with greater quantities of published pollution emissions, adjusted by size of corporation, on the National Pollutant Inventory have greater quantities of positive voluntary environmental disclosures in annual reports.

P1c. Corporations with greater quantities of published pollution emissions, adjusted by size of corporation, on the National Pollutant Inventory have greater quantities of voluntary emission disclosures in annual reports.

P2a. There is an increase in the quantity of voluntary environmental disclosures discussing compliance with the NPI in annual reports during the NPI implementation period by corporations required to publish emission information on the NPI.

P2b. There is an increase in the number of corporations providing voluntary environmental disclosures concerning pollution/emissions in annual reports during the implementation period of the NPI by corporations required to publish emission information on the NPI .

Objective 3 stems from questions regarding the quality of annual report voluntary environmental disclosures as mentioned in section 1.1. Concerns regarding the quality of voluntary environmental reporting led, to some extent, to the amendment of the Corporations Law to include s. 299(1)(f), a mandatory annual report environmental disclosure requirement. While the amendment has been considered a positive step to improving disclosures of environmental information in annual reports (Frost 2001; Deegan 2000a), this thesis questions the potential for the mandatory disclosures to be overshadowed or counteracted by voluntary disclosures appearing in the annual report.

Objective 3 is addressed through the following two propositions:

P3a. Australian listed corporations reporting non-compliance in accordance with the requirements of s. 299(1)(f) provide greater quantities of environmental disclosures in the voluntary section of the annual report than companies reporting no non-compliance.

P3b. Australian listed corporations reporting non-compliance in accordance with the requirements of s. 299(1)(f) provide greater quantities of positive environmental disclosures in the voluntary section of the annual report than companies reporting no non-compliance.

A detailed discussion on the theoretical perspectives utilised in the research area and this research is presented in chapter 3. The research objectives and propositions are established in detail in chapters 2 and 3 of the thesis.

1.3 Justification for the Research

This research is justified for a number of reasons. First, a greater understanding of the strategic nature of voluntary environmental disclosures is necessitated due to such disclosures being:

- identified as a strategic tool for altering the perceptions of users regarding the environmental performance of an entity (O'Donovan 1999);
- of value to users for environmental performance information (Collison, Lorraine & Power 2003; Epstein & Freedman 1994);
- criticised by previous authors, as mentioned in section 1.1, regarding the quality of such disclosures (Hughes, Anderson & Golden 2001; Deegan & Gordon 1996; Deegan & Rankin 1996; Tilt 1994);
- supported by industry on the grounds that there is no evidence that voluntary reporting has not been successful in providing environmental performance information to users (Australian Industry Group 1999);
- presented in the annual report alongside mandatory disclosures required by the Corporations Act 2001;
- identified as preferable to mandatory disclosures in recent recommendations considering sustainability reporting for Australian companies during an enquiry into

corporate responsibility (Parliamentary Joint Committee on Corporations and Financial Services 2006).

Second, prior to the introduction of s.299(1)(f) annual report environmental disclosure research has been limited to voluntary environmental disclosures. The introduction of the section provides an opportunity to examine whether mandatory disclosures are considered as possible threats to legitimacy by corporations required to disclose negative information in the annual report. It is also posited in chapters 2 and 3 that the strategic nature of voluntary disclosures and the limited scope of the section may limit the usefulness of mandatory disclosures when such disclosures appear in the same document.

Finally, as briefly stated in section 1.2, the method of content analyses adopted in previous Australian studies has focussed on the use of *quantity* of voluntary disclosures in annual reports as the sole indicator of the importance of an issue to a corporation. Limited research has examined changes in the *content* of voluntary disclosures.

1.4 Research Method

This research utilises content analysis to operationalise the mandatory and voluntary environmental disclosure variables tested in the propositions stated in section 1.2 of this chapter. Content analysis is 'a research technique for making replicable and valid inferences from data' (Krippendorff 1980, p. 21) and has been utilised extensively in Australian and international social and environmental disclosure literature (Deegan, Rankin & Tobin 2002; Patten 2002b; Deegan, Rankin & Voght 2000; Deegan & Gordon 1996; Deegan & Rankin 1996; Hackston & Milne 1996; Gray, Kouhy & Lavers 1995b; Zeghal & Ahmed 1990; Guthrie & Parker 1989; Cowen, Ferreri & Parker 1987; Freedman & Jaggi 1982; Wiseman 1982; Trotman & Bradley 1981; Ingram & Frazier 1980).

Annual reports are used as the disclosure medium in this research in order to address the objectives relating to the mandatory disclosure of environmental information as required by s. 299(1)(f). Furthermore, the use of the annual report allows comparisons with previous environmental disclosure literature, particularly Australian research (Deegan, Rankin & Tobin 2002; Deegan & Gordon 1996; Deegan & Rankin 1996; Gibson & Guthrie 1995; Guthrie & Parker 1989). A detailed discussion of the disclosure medium utilised in this and previous research is provided in section 4.4.1.

Both indexing and unitising content analysis procedures are adopted with the latter using sentences as the recording unit and words as the measurement unit. The selection of the recording and measurement unit has been the subject of much debate (Unerman 2000; Milne & Adler 1999; Hackston & Milne 1996; Gray, Kouhy & Lavers 1995b) and justification for the units used in this research is addressed in detail in section 4.4.2.

Mandatory and voluntary environmental disclosures are defined pursuant to the requirements of s. 299(1)(f) of the Corporations Act 2001. Voluntary environmental disclosures are further sub-categorised to represent emission disclosures and disclosures relating to the National Pollutant Inventory. The nature of disclosures is classified in accordance with previous Australian research (see section 4.4.5).

Statistical analyses used to test the research propositions are non-parametric. This is due to the limited sample size and violations of the assumptions of normality for the majority of variables used in the research. Justification for the method used in this research is detailed in chapter 4.

1.5 Structure of the Thesis

This thesis is divided into six chapters. Chapter 2 provides a summary of literature in the environmental disclosure area including an overview of (a) the history of corporate environmental reporting; (b) empirical research examining environmental disclosure behaviours of corporations and; (c) the introduction of the National Pollutant Inventory and s. 299 (1)(f) of the Corporations Law. Chapter 3 introduces a summary of theoretical perspectives utilised in previous research in the area and a detailed summary of the literature relating to legitimacy theory, the perspective used in this thesis. The research objectives and propositions are also developed in chapter 3. The research method utilised in this research is discussed and justified in chapter 4. Particular emphasis is given to the selection of the medium for disclosure and the content analysis process used. Chapter 5 provides the data analysis and results of the propositions outlined in chapter 3. A discussion of the findings is also included in chapter 5. The conclusion is presented in chapter 6 and includes a review of the objectives of the study, an overview of the findings of the research, the limitations of the research, and implications for future research in the area.

1.6 Definitions

The definitions below specify the meanings of the terms used in this thesis.

Annual report: document which includes annual financial report prepared under Chapter 2M of the Corporations Act 2001, ASX Listing Rule disclosure requirements and additional voluntary information determined by management.

Environmental disclosure: provision of information whether voluntary, mandatory, or by the company or a third party, pertaining to an aspect of environmental performance.

Environmental performance: the company's interactions with, and affects upon, the physical environment. Physical environment is defined in the *Protection of the Environment Administration Act* 1991 (NSW) section 3(1) as:

> Components of the earth, including a) land, air and water; b) any layer of the atmosphere; c) any organic or inorganic matter and living organism; and d) human-made or modified structures and areas, and includes interacting natural ecosystems

Mandatory disclosure: disclosure required under authoritative and regulatory bodies and includes those disclosures under government regulations and law, accounting standards, and the ASX.

Voluntary disclosure: disclosures made by an entity that are 'the revelation of information above and beyond that required by formal accounting and regulatory standards' (Devinney & Kabanoff 1999, p. 60).

1.7 Delimitations of scope

This research examines only a single environmental regulation, the NPI, on the voluntary environmental disclosure practices of the sample companies. As stated in chapter 3, Australian firms are subject to a number of environmental regulations at the local, state and national level. Although environmental regulation for the purposes of this research is restricted to the NPI emission-related disclosures, such disclosures may have been influenced by other environmental regulations or variables not identified in this research.

Mandatory annual report disclosures are limited to those required by s. 299(1)(f) of the Corporations Act 2001. Companies are also subject to mandatory reporting disclosures as a result of requirements of other authoritative bodies such as the Australian Stock Exchange and accounting standards. The latter, however, are a component of the financial reporting environment, which has been commonly criticised for ignoring issues relating to social and environmental performance activities (Deegan 2006).

This research utilises the annual report as the sole disclosure medium. The use of the annual report alone ignores voluntary disclosures utilised in other media such as company websites, stand-alone environmental reports, and promotional media. The annual report is justified in this instance, however, for comparisons with previous research and as the required document for including disclosures pursuant to the requirements of s. 299(1)(f) of the Corporations Act.

Care should be exercised in applying the results of this research to the broader population of Australian firms subject to the requirements of the NPI and s. 299(1)(f). As discussed in chapters 4 and 6, this research was limited by the sample size. Caution should also be exercised in applying the findings of this research to firms outside Australia as environmental regulations and annual report disclosure requirements differ across countries.

1.8 Chapter Summary

This chapter provided an introduction to the research outlined in this thesis. The chapter introduced the field of research, the research objectives and propositions. The research was justified, definitions were presented and the method briefly outlined, and the delimitations were identified. The review of relevant literature in the research area is now presented in chapter 2.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of literature relating to annual report environmental disclosure practices in Australia, and to a lesser extent, internationally. The first section of the literature review is a synopsis of the emergence of environmental concern within the Australian community. This is followed by a review of empirical research that examines relationships between environmental performance and environmental disclosure. The potential economic benefits of environmental disclosures to the corporation are also examined. The final sections of the chapter examine literature relating to the content and quality of annual report environmental disclosures and the introduction of the National Pollutant Inventory and section 299(1)(f) of the Corporations Law.

2.2 Changing Attitudes toward Environmental Disclosures

Since the 1960's there has been an increase in government environmental legislation and program development internationally (Welford 1999). A similar trend has been experienced in Australia (Australian Government 2006; Bates 1995; Lothian 1994). This increase has occurred in parallel to, and may be considered a consequence of, the increased concern of the Australian community regarding environmental issues and, in particular, business environmental performance (Australian Bureau of Statistics 2004; Lothian 1994).

In surveys conducted between 1975 and 1994, the community exhibited a constant level of concern (average of 33 per cent of those surveyed) for environmental issues during 1975-1986 (Lothian 1994, p. 82), and (average of 58 per cent) during 1990-1994[2] (p. 83). The results for environmental concern remained relatively stable when compared with alternative issues including unemployment, taxation, inflation and interest rates (Lothian 1994). Specifically, the environmental issues of greatest concern to most respondents were pollution and waste, followed by fauna and flora, natural resource use, global issues and urban issues (Lothian 1994). Similar results have been identified in recent years with 57 per cent of adult Australians stating they were concerned about environmental problems in 2004 (Australian Bureau of Statistics 2004)[3].

General community attitudes have also been reflected in the establishment of special interest groups which have been a stimulating force behind the changing legislative climate in which Australian corporations operate. The last forty years has seen the introduction of several environmental groups in Australia including The Wilderness Society, the Australian Conservation Foundation, Greenpeace Australia, World Wide Fund for Nature (WWF), Total Environment Centre, and the National Toxics Network[4]. The focus of these groups is protection of the environment and the education of society or sections of society on environmental issues. In order to achieve their objectives 'pressure groups are engaged in lobbying either the companies directly, or through government bodies' (Tilt 1994, p. 59).

[2] The results between the 1975-1986 and 1990-1994 periods are 'not strictly comparable' as questions differed in the two periods (Lothian 1994, p. 83). No similar surveys were undertaken between 1986 and 1990.

[3] No details were provided as to how "concern" was measured.

[4] See Appendix A for further information on these groups.

During the past thirty to forty years the objectives of the community and corporations were often misaligned (Welford 1999). Both environmental groups and the community have been instrumental in placing increased pressure on governments internationally to legislate for improved environmental performance by companies (Patten 1992). While the community and environmental groups were embracing the "environmental movement" in the 1960's and 1970's the reaction by companies internationally was quite different. During the 1970's, companies regarded environmental management with 'indifference and even hostility' (Welford 1999, p. 14). The corporate resistance approach corresponded with the confrontational approach adopted by many environmental groups who took a rigid attitude to issues of environmental concern. Companies appeared to ignore the shift in environmental focus occurring within society, perhaps hoping that it was a fad that would soon pass; however, a shift towards reduced environmental awareness and concern within the community was not to be forthcoming (Australian Bureau of Statistics 2004; Lothian 1994).

Recognising the change in community values and acknowledging the increased, and unwavering, focus on the environment, many companies have adopted environmental management as a strategic tool to improve competitive advantage (Welford 1999). Welford (1999) proposes that a company's environmental performance approach may be identified on a continuum ranging from resistance to transcendence. This framework is commonly known as the ROAST scale. It is not only applicable to the identification of a particular entity's environmental performance approach at a particular point in time, but is also representative of changes to the culture of corporations collectively over a period of time. The ROAST scale is displayed in Table 1 below.

Table 1: The ROAST scale

R	Stage 1 — Resistance	Total resistance to environmental values and rules. Organisations would be absolutely unresponsive and reactive to environmental initiatives
O	Stage 2 — Observe and Comply	The organisation observes environmental laws but actions reflect an unwilling attitude or lack of ability to comply. Actions are being enforced through legislation or court decisions.
A	Stage 3 — Accommodate	Organisation begins to adapt to change. Early indications of proactive and responsive behaviors. Actions are no longer based entirely on complying with environmental legislation the organisation begins to exhibit voluntary behavior.
S	Stage 4 — Seize and Pre-empt	The organisation voluntarily seizes and pre-empts its actions with environmental concerns. It proactively engages in setting the agenda. It is responsive to the many external stakeholders. The latter phases would display the attributes of sustainable development.
T	Stage 5 — Transcend	The organisation's environmental values, attitudes, beliefs and culture exhibit a total support for the environment. The organisation would proactively support and be responsive to all living things. It would act in a way which is fully consistent with sustainable development.

(Source: Welford 1999, p. 22)

Welford (1999) suggests that a major motivation for a company to move upward from one category of the ROAST scale to the next is competitive advantage. Competitive advantage is comprised of many components including but not limited to, favourable relationships with pressure groups, positive media coverage, and better community relationships (Welford & Gouldson 1993). In particular, Australian companies suggest that the most frequent benefits are those such as enhancement of company reputation, confidence of insurers, investors and finance providers, and improvements in company operation and management (Department of Environment and Heritage 2004). More specifically, the Business Council of Australia (2005, p. 14) states that the economic drivers of corporate social responsibility are 'employee recruitment, motivation and retention; learning and innovation; reputation management; risk profile and risk management; competitiveness and market positioning; operational efficiency; investor relations and access to capital; and licence [sic] to operate'.

A useful example of corporate positioning on the ROAST scale is provided by Boral Green Shareholders, an ethical investment group[5]. Boral Limited has been involved in the wood

[5] Hummels and Timmer (2004, p.74) describe ethical investors as those investors who 'do not solely or even primarily focus on the financial implications of unethical or unsustainable behaviour or activities of the companies they invest in. Their prime focus is the (undesirable) character of the behaviour or activities itself'. It is estimated that the value of socially responsible investment (SRI) assets in Australia was $21.5 billion in 2004

chipping of Australian native forests. The Boral Green Shareholders group (2001a) has described Boral as being 'currently perceived as an old economy, industrial-age company, selling commodities and tolerating its environmental responsibilities through a commitment to compliance: hardly a world beater'.

The shareholders have been actively campaigning for changes in Boral's approach to environmental issues. If the above description of Boral's current approach to environmental management is accurate, Boral would only be situated at stage 2 of the ROAST scale – observe and comply. This positioning does not meet the expectations of the group which argues 'that a truly committed company aims to do more than just comply' (Boral Green Shareholders 2001b). Consequently the group had previously nominated a candidate for director in both 2000 and 2001. The group believed that the nomination of an environmentally sensitive director to a predominantly financially-focused board would:

> …help Boral make the transition to a new economy, 21st century information and service driven company…providing the company is prepared to make a real commitment to sustainability to review its extraction, production, transportation and consumption patterns.
> (Boral Green Shareholders 2000)

The group argues that Boral needs to evolve from a follower mentality to that of leader and that failure to move upward to more proactive strategies:

> …will see Boral's fortunes continue to founder. The train of sustainable development is leaving the station globally. Will Boral be on it and remain competitive? Or will it be left at the station?
> (Boral Green Shareholders 2000)

As noted above community (including shareholder) concerns relating to the environment resulted in a focus on corporate environmental performance. These concerns have also coincided with another phenomenon – environmental reporting and disclosure. Several researchers have noted changes in corporate environmental (and social) reporting[6] practices

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(Ethical Investment Association 2004, p. 1). This represents a 1020% increase in SRI since 2000 (Ethical Investment Association 2004, p. 9)

[6] Environmental reporting is often used as a sub-category of social reporting.

over the period (see for example Deegan, Rankin & Tobin 2002; Guthrie & Parker 1989; Hogner 1982; Trotman 1979).

Hogner (1982) investigated social disclosures in the corporate annual reports of US Steel from the reporting period 1901 to 1980. The principal purpose of the study was to examine how a long-standing company responded to changing societal demands as documented in the annual report. During the period several social issues were prominent in the annual reports including the status of women, human resources, workplace health and safety, and the environment. Other issues, excepting worker safety which was regularly reported from 1915 to 1980, were covered for particular reporting periods. For example, the proportion of women in the workforce was an issue between 1943 and 1957 but was not reported after that period. Similarly, even though there was evidence of pollution abatement expenditure in previous reporting periods, disclosures regarding the company's pollution abatement attempts did not begin until 1966 and continued through to the last year examined. Hogner (1982, p. 249) attributed these changes in disclosure issues as 'a concentration on the reporting of activities that society is perceived as valuing most at the time' explaining the phenomena of social reporting as 'an indicator of the changing institutional structure of business in response to changing societal demands' (1982, pp. 244–245).

In a similar study Guthrie and Parker (1989) investigated corporate social reporting by the Broken Hill Proprietary Company Limited (BHP) for the period 1885 to 1985. Using content analysis and page measurement, the authors recorded social disclosures across the themes of environment, energy, human resources, products, community involvement and others. In all, there was evidence of both high and low levels of social disclosure with peak disclosure periods occurring between 1890 and 1910, and mid 1970's and mid 1980's (1989, p. 346). Human resources were again the most frequently reported issues, followed by community involvement, energy and, finally, the environment. In fact, apart from a brief reporting period in the 1950's, environmental disclosures were not included but reappeared in the early 1970's and again in the early 1980's. The company's environmental disclosure practices appear to have been a response to public pressure in the later years (Guthrie & Parker 1989).

Deegan, Rankin and Tobin (2002) updated the work of Guthrie and Parker (1989) through an examination of BHP's social and environmental disclosures in annual reports for the period 1983–1997. The authors measured "community concern" using quantities of articles in the print media referring to the company's social and environmental activities or performance.

Similar to Guthrie and Parker (1989), the quantity of disclosures increased over the period and a significant relationship was identified between the level of media attention given to BHP and the quantity of annual report disclosures for the themes of environment and human resources (Deegan, Rankin & Tobin 2002). It was also found that although the majority of media articles portrayed the company's impact on society and the environment unfavourably, significant quantities of the annual report disclosures were positive in nature.

Even though these studies only investigated the social and environmental disclosure practices of firms operating in two different countries, the evidence so far suggests that modern *environmental* disclosure practices (along with community concern regarding the environment) commenced around the 1960's. Trotman (1979) examined the annual reports of the 100 largest listed Australian companies within the years 1967 and 1977. Twenty-six per cent of the sample companies made social disclosures in 1967 (Trotman 1979, p. 25); however, the quantity of disclosures on social and environmental issues increased to 48 per cent in 1972 and 69 per cent percent in 1977 (Trotman 1979, p. 25). The phenomenon of environmental disclosure was also being noted internationally in the United States and the United Kingdom (Gray, Owen & Maunders 1987; Anderson & Frankle 1980; Spicer 1978; Belkaoui 1976). More recent research has investigated disclosures in Canada (Al-Tuwaijri, Christensen & Hughes II 2004; Li, Richardson & Thornton 1997; Zeghal & Ahmed 1990), Denmark (Bebbington 1999), mainland Europe (Roberts 1991), New Zealand (Hackston & Milne 1996), Singapore (Newson & Deegan 2002; Perry & Sheng 1999), Hong Kong (Gao, Heravi & Xiao 2005), Thailand (Kuasirikun & Sherer 2004) and South Korea (Newson & Deegan 2002; Choi 1999).

As discussed in this section, the change in environmental (and social) disclosure practices coincided with a change in community values and an increase in concern about the environment in general. There has been a well-documented increase in disclosure practices since the 1960's. So, the question now to be addressed is 'who' is disclosing? Based on the preceding discussion, which appears to provide a general association between increasing community concern and increasing corporate voluntary environmental disclosure, it could be speculated that those companies which create most community concern over environmental issues would also be those making the most disclosure. Therefore, previous research examining the association between corporate environmental performance and voluntary environmental disclosure practices is now discussed.

2.3 Environmental Performance and Environmental Disclosure

In many of the early empirical studies concerning the association between environmental performance and corporate environmental disclosures, the Council on Economic Priorities (CEP) ratings[7] were used as the measure of environmental performance (Freedman & Wasley 1990; Freedman & Jaggi 1982; Wiseman 1982; Ingram & Frazier 1980). These studies found no significant associations across the samples examined; although interesting observations were identified in some of the studies.

For example, Rockness (1985) used CEP ratings to measure environmental performance and measured environmental disclosure by having non-investor subjects assess annual reports. No significant association was found between the environmental performance and voluntary environmental disclosure of the entire twenty-six firms in the sample. There was, however, a significant negative association for large corporations that received less favourable ratings for environmental performance.

In a later study, Li, Richardson and Thornton (1997) investigated the effect that the risk of incurring proprietary costs had on the corporate decision to disclose[8]. They suggest that costs of disclosure of previously unpublished environmental information may occur from several factors. These include government agencies who may initiate investigations resulting in compliance costs, victims of environmental incidents who may undertake legal action, financiers who may raise concerns regarding potential future liabilities, competitors who may use the information for green marketing to consumers, and environmental groups who may initiate actions against the company and/or lobby for further restricting legislation (Li, Richardson & Thornton 1997). Pollution related events were measured according to the issuance of administrative orders, environmental prosecutions and pollution spills from the Canadian Ministry of Environment and Energy in Ontario. These events were then compared to disclosures by listed companies in a variety of documents including annual reports, information forms, management discussion and analysis, quarterly reports and press releases. The study found a significant positive association between the pollution-proneness of the firm and the level of disclosure.

[7] The Council on Economic Priorities was founded in 1969 and is a non-profit organisation that rates firms on their environmental performance.

[8] As is the case with several other studies the authors did not make a distinction between voluntary and mandated environmental disclosures in the article.

Al-Tuwaijri, Christensen and Hughes II (2004) sampled 198 firms from the Standard & Poor's 500 index. The authors included environmental concern as a measure of management strategy and pollution data as a measure of environmental performance. Environmental disclosures were measured according to the occurrence of environmental events and the quality of the disclosure of those events in the firm's annual reports and 10K's[9]. The theoretical model was tested using simultaneous equation modelling. Using different proxies and statistical analysis techniques to those of previous researchers, a significant negative association was found between environmental performance and environmental disclosure[10].

Firms that have experienced a serious environmental event or are in a related industry to a firm that has experienced such an event increase their environmental disclosures in subsequent periods (Deegan, Rankin & Voght 2000; Deegan & Rankin 1996; Patten 1992). In 1989, the Exxon Valdez tanker hit Bligh Reef in the Prince William Sound off Alaska's southern coast. As a result approximately forty million litres of crude oil was spilled causing the United States worst oil spill. Exxon spent approximately US$ 2 billion on subsequent clean up costs. Patten (1992) examined the annual reports of twenty-one listed companies in the petroleum industry of the Fortune 500 in 1989. Environmental disclosures in annual reports for 1988 (the preceding year to the spill) and 1989 (the subsequent year to the spill) were examined. The study identified a significant increase in environmental disclosures over the two years examined (Patten 1992). Considered separately from the sample, Exxon increased coverage of environmental issues from 0.6 pages of environmental disclosures in the 1988 annual report to 6 pages of environmental issues in 1989, including 3.5 pages on Exxon Valdez (Patten 1992, p. 472).

Australian corporations have also been found to increase the level of disclosures following the occurrence of Environmental Protection Agency fines or prosecutions (Deegan & Rankin 1996) and following adverse media attention (Deegan, Rankin & Tobin 2002; Brown & Deegan 1998). Deegan and Rankin (1996) undertook an investigation of the disclosures of twenty companies that had been successfully prosecuted by the New South Wales or Victorian Environmental Protection Authorities for offences relating to the environment. Annual reports of twenty companies from the same industries that had not been prosecuted

[9] Regulated environmental reports to be provided with annual reports filed with the US Securities and Exchange Commission.

[10] The authors do not distinguish between voluntary and mandated disclosures within the study.

were also analysed to identify whether differences existed between the two groups' disclosure levels. The authors used content analysis with number of words as the unit of measurement and disclosures were classified as either positive or negative. There was a significantly higher level of total environmental disclosures for the prosecuted firms in the years of prosecution than in the years when no prosecution occurred.

The results of studies, both internationally and within Australia, have identified a significant relationship between the environmental performance and environmental disclosure of corporations. In general, corporations with environmental performance which may be considered "poor" have provided higher levels of environmental disclosures than other corporations. In an attempt to explain these results many researchers have explained the increased levels of environmental disclosures as a *legitimising* tactic (see for example Deegan, Rankin & Tobin 2002; Milne & Patten 2001; Brown & Deegan 1998; O'Donovan 1999; Deegan & Gordon 1996; Deegan & Rankin 1996; Lindblom 1994; Patten 1992; Hogner 1982). Briefly, legitimacy theory 'is based on the idea that in order to continue operating successfully, corporations must act within the bounds of what society identifies as socially acceptable behaviour' (O'Donovan 2002, p. 344)[11]. As argued by Ullmann (1985, pp. 541-542):

> Obviously, companies disclosing social responsibility information on a voluntary basis are convinced that the value of this information is not zero…a firm making social disclosures assumes that the recipient's evaluation of the information will benefit the firm.

Therefore, if companies are using environmental disclosures in annual reports as a legitimising tactic it may be suggested that (1) they believe users find information on corporate environmental performance of relevance; and (2) that such disclosures are in some way beneficial to the company (Ullmann 1985). These issues are now discussed in the following two sections.

[11] Legitimacy theory will be discussed further in chapter 3.

2.4 Externally Published Environmental Disclosures, Corporate Environmental Disclosures and Information Usefulness to Investors

Many early US studies examining environmental disclosures by companies focused on the relationship between disclosure and economic performance (Rockness, Schlachter & Rockness 1986; Shane & Spicer 1983; Anderson & Frankle 1980; Spicer 1978; Belkaoui 1976). While the studies in this section are based on a single stakeholder, the investor, differing views exist in relation to who is a stakeholder of a corporation. These will be examined in greater detail in chapter 3. At this point it is the author's intention to identify whether the decision to disclose, or not to disclose, may provide benefits to the corporation. Before proceeding, however, some clarifications of the approach adopted in the earlier studies must be outlined.

The use of capital market research to determine the effect of voluntary disclosures on firm performance has been criticised. Deegan (2004) outlines several limitations of research which uses changes in market prices as the sole indicator of the effects of disclosure. He argues that much of the capital market research either does not outline clearly the assumptions made, or utilises assumptions (such as market efficiency) which in themselves have been questioned. In particular, Deegan (2004, p. 87) is critical of the '*shareholder-primacy* focus' adopted by capital market researchers. Such criticisms cannot be ignored in light of the base of environmental disclosure literature which has acknowledged a broader consideration of organisational stakeholders, particularly in the Australian context (see for example Deegan, Rankin and Voght 2000; Deegan & Gordon 1996; Deegan & Rankin 1996; Tilt 1994). Unfortunately, it remains that the majority of empirical research in relation to benefits of environmental disclosure has focused on the *economic* benefits, or otherwise, of disclosure to the entity and/or the investor. Hence the focus of this section is, by necessity, based on the investor as a potential user of environmental information.

Market-based variables have often been used as measures of economic performance because of the importance of investors as corporate resource providers. Milne and Patten (2002, p. 373) even suggest that 'annual reports (and their environmental disclosures) are intended primarily for financial stakeholders'[12]. Several studies have shown that environmental

[12] This approach appears consistent with much of the literature from US studies.

performance information has an information value to investors (Blacconiere & Northcutt 1997; Blacconiere & Patten 1994; Shane & Spicer 1983; Anderson & Frankle 1980).

Ullmann (1985) argues that the relationship between social performance and corresponding annual report disclosures by corporations, and the impact on corporate economic performance may be affected by the importance the investor placed on economic and/or social performance. As such, Ullmann (1985, p. 549) suggests that 'Friedman-style' investors[13], or those with an essentially economic perspective on corporate success, would react to expenditure and disclosures regarding corporate social performance by placing 'a negative premium on companies apparently involved in what they consider wasteful voluntary social responsibility activities'. He argues that in contrast 'the "ethical" investors may be willing to pay a premium price for shares of a socially responsive firm, causing the price to go up' and that 'social disclosures also may improve a security's risk associated with expensive social performance improvement programs, potential fines, or social sanctions' (Ullmann 1985, p. 549). Therefore, it is necessary to determine whether such disclosures are of interest to users.

Empirical research has shown that many investors *are* interested in corporate environmental performance. Epstein and Freedman (1994) surveyed individual investors to determine their preferences for corporate social expenditure and the information they thought should be disclosed. Respondents rated 'clean up their plants and stop environmental pollution' as the most important item for corporate social investment (1994, p. 104). The category 'pay higher dividends' rated only third, indicating that investors either (1) possessed an environmental conscience, (2) were aware of the potential liabilities from poor environmental performance or, (3) expected a loss of competitive advantage from failing to improve environmental performance. Over 82 per cent of the respondents wanted information on environmental activities included in the annual report. This was second in importance only to product quality (1994, p. 106).

Managers also believe that environmental information is important to stakeholders. Collison, Lorraine and Power (2003) surveyed UK firms from polluting industries[14] to determine

[13] Milton Friedman (1970) argues that companies have no social responsibility beyond that required by law and the maximisation of profits. According to Mulligan (1986, p. 266) Friedman is suggesting that corporate executives engaging the company in social and environmental activities are 'a sort of Lone Ranger' who is 'imposing something on those other stakeholders – unfairly, undemocratically, unwisely, and in violation of a trust'.

[14] Including the power, water, minerals, construction, chemicals, food and brewing industries.

managers' attitudes to environmental information. Respondents were asked to identify whether they perceived disclosures of environmental information to be important to stakeholder groups including shareholders, the community, regulators, pressure groups and customers. The authors found that the majority of respondents believed environmental disclosures to be important to all groups. As may be expected, 87.9 per cent believe the disclosures are important to regulators, 75.9 per cent to the community, 65.6 per cent to pressure groups and 57 per cent to customers (Collison, Lorraine & Power 2003, p. 204). While only 43.1 per cent of managers believed environmental disclosures were important to shareholders, only 17 per cent suggested they were of no importance, the remainder giving no opinion.

Indicative of changes in Australian investor expectations has been the emergence of ethical and environmentally focused shareholder groups in Australia over the past decade particularly for corporations operating within environmentally sensitive industries such as mining and timber. Several of these groups emerged during the 1990s and 2000s including the Boral Green Shareholders, BHP Shareholders for Social Responsibility (established 1994), Amcor Green Shareholders which is now generally Paperlinx Green Shareholders (established 1997)[15], North Ethical Shareholders (established 1999) and Gunns Ethical Shareholders (established late 2000). Several of these groups have taken active roles in the development of resolutions and participation at annual general meetings. Groups such as the Boral Green Shareholders are well-organised with extensive websites, regular newsletters and nominating candidates with environmental and social backgrounds for director positions. In 2000 the Boral Green Shareholder director candidate, Christine Milne, obtained almost 13 per cent of shareholder votes (Boral Green Shareholders 2001a).

Considering the argument proposed by Ullmann (1985) and the results of Epstein and Freedman (1994), the public release of negative environmental information about a corporation may have an impact on its economic bottom line. Limited research has investigated the effect of external environmental disclosures on the economic performance of firms. Shane and Spicer (1983) investigated the existence of an association between the release of environmental performance ratings by the CEP and subsequent changes in the securities market. The study found that firms receiving low ratings on pollution control experienced greater negative security returns subsequent to the release of the ratings than those firms that obtained higher ratings. This suggests that the release of environmental

[15] Following the de-merger of Paperlinx from Amcor in 2000.

information by an external source may be of information value to the market. Of greater concern to the corporation, is that publication of environmental information that is negatively perceived may have a *negative* impact on the economic performance of polluting firms.

While the firm may have little control over publications made by external sources, the impact of those publications may be minimised by strategic increases in internally generated disclosures by the firm. Following the Union Carbide disaster, investors appeared to make investment decisions based on the level of environmental disclosures provided by firms in related industries. Studying the reaction of the US securities market to the chemical leak at Union Carbide in India in 1984, Blacconiere and Patten (1994) found that a significant negative reaction occurred in the market for firms within the chemical industry. Of additional importance was the reduced impact of the event on firms that had greater levels of environmental disclosure in their annual reports prior to the leak.

In a later study Blacconiere and Northcutt (1997) investigated the market reaction of US chemical industry firms following the release of information relating to changes in Superfund[16] legislation. They also studied the effect of disclosures on that market reaction. Negative market reactions occurred for those firms that were expected to have high levels of future superfund costs. A less negative reaction was experienced again for firms with greater voluntary and mandatory environmental disclosures in the annual report.

Similarly, Freedman and Patten (2004) investigated if companies with higher levels of emissions, as published on the US Toxic Release Inventory (TRI), had greater negative market returns and if the extent of environmental disclosures in annual reports had an effect upon the level of market reaction. They found that the greater the level of emissions published on the TRI, the greater the negative market reaction. They also found, however, that the negative market reaction was reduced for firms with higher levels of environmental disclosures in 10-K reports.

The similar market results of these studies suggest that investors may have been surprised by the negative impact on the environment itself and/or the expectation of litigation for poor environmental performance; however, they favoured firms that showed greater levels of

[16] The US Superfund was created in 1980 when the *Comprehensive Environmental Response, Compensation, and Liability Act* was enacted by Congress. The Act resulted in a tax on the chemical and petroleum industries. Superfund is controlled by the US EPA and identifies, evaluates and arranges cleanup of sites affected by toxic waste (United States Environmental Protection Agency 2006).

upfront reporting. Investors appear to believe that companies with more disclosures provide more decision-useful material in their reports and/or favour corporate strategies that include environmental management. Overall, these results suggest that the use of environmental disclosures in annual reports may be economically beneficial to the corporation.

Previous research has found that the community, including investors, is interested in the environmental performance of companies (Collison, Lorraine & Power 2003; Epstein & Freedman 1994; Lothian 1994). Although there are many companies providing voluntary disclosure, do voluntary disclosures provide relevant and reliable information to users of annual reports? Within a voluntary reporting framework the corporation is free to determine the information provided within those disclosures. Previous research examining the content and quality of corporate environmental disclosures will now be discussed.

2.5 Content and Quality of Environmental Disclosures

O'Donovan (1999) identified a belief among Australian corporate executives that annual report disclosures were a useful tool in modifying both the media and public perception of the firm's environmental performance. In circumstances where negative environmental information has received media attention, the incentive to disclose is greater (O'Donovan 1999). Brown and Deegan (1998) provide further empirical support for this approach, identifying a positive relationship between the levels of media attention received and the quantities of annual report disclosures relating to the environment. The use of environmental disclosures as a corporate strategy is not surprising given the results of previous studies indicating investor concern for the environment (Epstein & Freedman 1994) and the potential economic benefits from environmental disclosures (Blacconiere & Northcutt 1997; Blacconiere & Patten 1994); however, early studies found that annual report disclosures tended to be predominantly positive in nature containing little negative information as to environmental performance (Deegan & Gordon 1996; Deegan & Rankin 1996; Guthrie & Parker 1990).

Deegan, Rankin and Voght (2000) investigated the effect of five corporate environmental and human disasters that received Australian media attention on the subsequent disclosures of organisations that were directly affected or in a related industry. Using sentences as the unit of disclosure measurement, social and environmental disclosures were measured for two years

prior to and subsequent to the incident. Significantly greater levels of disclosures occurred in annual reports in the subsequent period of the related firms for four of the five disasters examined. Specifically, the proportion of positive disclosures was significantly greater. They stated (2000, p. 127):

> These results highlight the strategic nature of voluntary social disclosures and are consistent with a view that management considers that annual report social disclosures are a useful device to reduce the effects upon a corporation of events that are perceived to be unfavourable to a corporation's image.
>
> Such findings are of some relevance to any call for mandatory social and environmental reporting requirements. After considering the results of this study, as well as other related research, it would appear that in jurisdictions such as Australia (where there are limited mandatory requirements pertaining to the disclosure of social and environmental reporting), various stakeholders who read annual reports will be more likely to receive information when management perceive that organisational legitimacy is threatened.

Although there are numerous instances of firms engaging in voluntary disclosure, there is little evidence to suggest that voluntary disclosures provide relevant[17] and reliable information to users of annual reports. Voluntary disclosures are 'the revelation of information above and beyond that required by formal accounting and regulatory standards' (Devinney & Kabanoff 1999, p. 60). Rockness (1985)[18] tested the reliability of voluntary environmental disclosures provided in annual reports of twenty-six US firms in the oil, steel and pulp and paper industries. Subjects were required to evaluate the corporations' environmental performance (measured by CEP ratings) from the voluntary environmental disclosure information in the annual report. It was found that subjects assessing information provided in the annual reports mistakenly identified the worst environmental performers as the best and vice versa.

In addition to issues relating to content and quality of voluntary disclosures, the timing of such disclosures has also been questioned. Previous research has noted that many annual

[17] The AASB *Framework for the Preparation and Presentation of Financial Statements* (para. 26) defines relevance as 'to be useful, information must be relevant to the decision-making needs of users'. As stated in paragraph 29, 'the relevance of information is affected by its nature and materiality'. Paragraph 30 states that 'information is material if its omission or misstatement could influence the economic decisions of users'.

[18] Apart from the Rockness (1985) study, and those studies which have examined the economic impact of voluntary environmental disclosures, there is limited empirical research that has examined whether corporate disclosures have an impact in developing or changing public perceptions of corporate environmental performance.

report disclosures are a response to actual or expected community concerns and not to accountability[19]. For example, Deegan, Rankin and Tobin (2002, p. 335) state:

> In jurisdictions such as Australia, where there are limited regulatory requirements to provide social and environmental information, management appear to provide information when they are coerced into doing so. Conversely, where there is limited concern, there will be limited disclosures. The evidence in this paper, and elsewhere, suggests that higher levels of disclosure will only occur when community concerns are aroused, or alternatively, until such time that specific regulation is introduced to eliminate managements' disclosure discretion.

Therefore, although previous research has found that companies are providing environmental information voluntarily in the annual report, many problems within that system have been identified. As discussed by Deegan, Rankin and Tobin (2002) there must be an actual or perceived belief that community concern exists (or will exist at a future time) before environmental disclosures will occur. Furthermore, previous research has shown that the information contained within the voluntary disclosures is generally positive in nature (Deegan, Rankin and Voght 2000; Deegan & Rankin 1996), and may lack credibility (Deegan & Gordon 1996; Deegan & Rankin 1996), have questionable reliability (Berthelot, Cormier & Magnan 2003) and be of limited use to users (Hughes, Anderson & Golden 2001; Tilt 1994). It has also been suggested that the disclosures may be misleading to users of the annual reports (Deegan & Rankin 1996; Rockness 1985). The findings of these empirical studies provided some support for requests for mandatory environmental disclosure legislation by researchers (Gray, Owen & Maunders 1987) and pressure groups (Tilt 1994). These requests suggested a belief that mandatory reporting requirements could improve the *quality* and *content* of environmental disclosures in annual reports.

In 1998 two mandatory environmental disclosure systems were introduced into the Australian environmental disclosure landscape. First was the establishment of the National Pollutant Inventory as a public database disclosing corporate pollution emissions on the Internet. The second event was the amendment to the Australian *Corporations Law*[20] to include s. 299 (1)(f) which requires companies to include environmental information in the annual report. These mandatory reporting requirements will now be examined.

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[19] Accountability is defined by Gray, Owens and Adams (1996, p. 38) as 'the duty to provide an account (by no means necessarily a financial account) or reckoning of those actions for which one is held responsible'.

[20] Now the *Corporations Act 2001*.

2.6 The National Pollutant Inventory[21]

The National Pollutant Inventory (NPI) is the first National Environment Protection Measure (NEPM) to be established by the National Environment Protection Council (NEPC). The NEPC is operated under the *National Environment Protection Council Act 1994.* The establishment of the NEPC as a national body followed the signing of the *Intergovernmental Agreement on the Environment* in 1992 by all state and territory jurisdictions. Within Australia the environment is managed within several jurisdictions including the Commonwealth, State and Territory Governments. While all jurisdictions have worked cooperatively in the management of the environment for many decades, the establishment of the NEPC added a new dimension to the care of the environment within Australia. The NEPC develops NEPM's, which are then implemented by, and take effect in, each jurisdiction.

In 1996, the Organisation for Economic Co-operation and Development (OECD) recommended that all member countries adopt a publicly available Pollutant Release and Transfer Register (PRTR) system. The NPI is the Australian version of a PRTR system. The NPI was first published in January 2000 and lists companies with pollution emission levels that exceed the inventory's base threshold amounts.

The goals and objectives of the NPI NEPM are outlined in sections 5, 6 and 7 of the NEPM. The NEPC (2002, p. 11) summarises these as being to:

(a) provide information to enhance and facilitate policy formulation and decision making for environmental planning and management;

(b) provide publicly accessible and available information, on a geographic basis about specified emissions to the environment, including those of a hazardous nature or involving significant impact; and

(c) promote and assist with the facilitation of waste minimisation and cleaner production programs for industry, government and the community.

The objective of the NPI was outlined by the Federal Environment Minister Senator Robert Hill in January 2000 when he stated: 'Using the internet, the NPI allows all Australians to find out what large factories are discharging into the environment, as well as showing what actions

[21] The National Pollutant inventory is available at:
http://www.environment.gov.au/epg/npi/database/database.html

a factory may be taking to reduce its emissions of pollution' (Hill 2000). In particular the NPI was described as being 'designed to provide the *community, industry* and *government* with information on the types and amounts of chemicals discharged into the air, land and water' [emphasis added] (Hill 2000). Howes (2001, p. 529) explains:

> The Australian National Pollutant Inventory (NPI) is designed to generate political and economic incentives for industry to move towards cleaner production. It enables community groups to put pressure on polluters and provides an opportunity for firms to identify inefficiencies. The inventory is built upon several liberal-democratic premises regarding the power of knowledge, the right to know, the effectiveness of pressure groups, and the ability of government to correct market failures.

The NPI is similar to, and based upon, the United States Toxic Release Inventory (TRI) (Howes 2001), and was implemented in 1996 by the NEPC through an NPI NEPM. The original NEPM underwent a national consultation process to take into consideration comments by industry, environment and community groups, and individuals. Notably, there was no representation by shareholder or investor groups. Following consideration of the comments received the revised NEPM came into effect on the 1st July 1998. Similar inventories operate in the United Kingdom (now the Pollutant Inventory) and Canada (the National Pollutant Release Inventory).

Companies operating in Australia are required to estimate emissions[22] exceeding the specified threshold amount and reporting for the inventory became mandatory for the period 1 July 2000 to 30 June 2001. The inventory is published on the Internet for public viewing following the end of the reporting period. The NPI provides interested users with pollution emission details of companies including the company address and contact details, as well as the substance and quantity emitted.

The implementation period comprised two voluntary reporting periods and a mandatory reporting period in which companies reported on thirty-six of the potential ninety reportable

[22] The estimation of emission data was considered a major limitation of the NPI (Howes 2001; Streets & Di Carlo 1999). Based on the allowance to estimate emissions, it was expected that only major facilities already required to monitor actual emission levels under other environmental licensing requirements would provide relatively accurate data (Streets & Di Carlo 1999). Furthermore, priority was to be given to encouraging reporting on the NPI in its initial years with no enforcement for the first two years of operation (Streets & Di Carlo 1999; Sullivan 1999). Subsequently, verification, enforcement and penalties would be the responsibility of the various State and Territory governments (Sullivan 1999).

substances[23]. Entities were required to report on ninety substances commencing 1 July 2001 to 30 June 2002. Table 2 summarises the reporting period and the type of reporting required.

Table 2: Implementation program for the NPI

Period	*Activity*	*Number of substances*[24]
1 July 1998-30 June 1999	1st Voluntary NPI year	36
1 July 1999-30 June 2000	2nd Voluntary NPI year	36
1 July 2000-30 June 2001	1st Mandatory NPI year	36
1 July 2001-30 June 2002	2nd Mandatory NPI year	90

A broad area of issues was covered through the submission process and the majority of submissions were received from industry with minimal representation from environmental groups[25]. Initially there was dissatisfaction with the term 'pollutant' with industry suggesting it was emotive and conjured up negative impressions for readers. It was suggested that it be replaced with the term 'emissions' (submissions by Australian Petroleum Production & Exploration Association, Minerals Council of Australia ACT, Chamber of Commerce & Industry WA, SA Employers' Chamber of Commerce & Industry/Engineers Employers Association of SA, Metal Trades Industry Association of Australia, Plastics and Chemicals Industry Association VIC, Chamber of Minerals & Energy of Western Australia Inc). It was also argued that the identification of individual facilities could be a threat to commercial in-confidence and facility security (submission by BOC Gases NSW). Corporations also addressed comments made by Government on the usefulness of the NPI in placing public pressure on organisations to clean up their operations. In particular, Queensland Alumina Limited stated that 'making data available to the public to pressure for change is an abdication of responsibility by the government' (National Environment Protection Council 1998, p. 21).

[23] A list of the initial thirty-six reportable substances is included in Appendix B.

[24] Substances include those to air, land and water. In contrast to the NPI, over 600 substances are reported on in the US.

[25] No explanation is provided as to why representation from environmental groups was minimal. The level of representation was in contrast to an earlier discussion paper released by the Commonwealth Environment Protection Agency (initially responsible for the proposed NPI before handover to the NEPC) in 1994 in which representation from environment and community groups represented 27 per cent of all submissions (Ernst & Young 1995, p. 2). It should be noted, however, that only 107 submissions were returned in the 1994 mail-out of 4000 discussion papers (Ernst & Young 1995, p. 2). Environmental groups have, since its inception, criticised the extent of the NPI regarding the number of reportable substances, lack of enforcement and minimal penalties (Howes 2001).

Various industry groups and companies expressed concern over the potential negative public reaction to the NPI's emission information. For example, submissions by Queensland Alumina, the Australian Petroleum Production and Exploration Association, the Australian Chamber of Manufacturers Victoria, and the Metal Trades Industry Association of Australia (MTIAA) suggested that 'information and data must be presented in a clear, meaningful way, in its proper context and in [*sic*] way which is not misleading' (National Environment Protection Council 1998, p. 52). The extent of the concern over the public's interpretation of the data was further evident with the MTIAA and Queensland Alumina Ltd further suggesting 'making data available in 'plain language' will not prevent some sections of the public from misusing or misconstruing the data' (National Environment Protection Council 1998, p. 52).

To address these issues a variety of organisations (including Rio Tinto, Australian Aluminium Council, Australian Chemical Specialties Manufacturers Association Victoria, and the Tasmanian Minerals Council Limited) indicated that contextual information should be included to ensure that the public was 'fully informed and able to interpret the data' (National Environment Protection Council 1998, p. 51). In contrast, No-Lead[26] South Australia expressed concern that the inclusion of contextual information 'could be used to mislead and manipulate the public' (National Environment Protection Council 1998, p. 54). BHP Victoria indicated that descriptive or interpretive information relating to a facility's emissions that may be included on the NPI (by Environment Australia) should be approved by the facility first. And finally, concern was expressed over the failure to provide an incentive which would distinguish good environmental performers in the NPI process (Healthy Cities Illawarra Incorporated NSW).

Considering the economic impact, many organisations and industry groups expressed concern over the cost of compliance with the reporting requirements. It was even suggested that 'NPI costs will erode Australian firm's international competitiveness' (National Environment Protection Council 1998, p. 78) (submission by Huntsman Chemical Company Pty Ltd, Victoria); however, entities in the United States are required to report on over 600 substances compared to the ninety substances initially required by the NPI.

It was estimated that NPI compliance costs would average approximately $2000 per site per annum although costs would vary according to the type and scale of production (Howes 2001,

[26] Non-profit community group working to reduce the incidence of lead poisoning within the community and the environment.

p. 533); however, corporations in the United States have experienced cost reductions through reductions in waste identified from reporting for the TRI (Howes 2001). Furthermore, Environment Australia suggests that payback periods on expenditure in environmental improvement can be less than eighteen months (Environment Australia 2000).

Clearly, from the submissions made in the development process of the NPI there was a general belief amongst industry organisations that the NPI would impose economic costs upon organisations through an increase in compliance and through an erosion of competitive advantage. There was also a general concern that emission data should be supported by contextual information so that the public could read the data in its "true" context.

The existing NPI provides a quantitative measure of estimated substances emitted and an explanation of the individual substances included in the database. Contextual issues have been addressed by the provision of a health hazard rating for each substance determined from its environmental and human health effect[27]. Companies are also permitted to have "hot links"[28] to their own websites; however, in the Caveat to the database, Environment Australia does not claim any responsibility for the information provided on company websites:

> The hotlinks are provided to allow for additional information. The views expressed in the material contained in the hotlinks are not the views of the Commonwealth. The Commonwealth does not accept responsibility for the accuracy or completeness of the material contained on the hotlinks and shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of or reliance on the hotlinks. (Environment Australia 2000)

Early results indicated that the NPI had proven to be a valuable information resource for some sections of the community. A 'Review of the National Environment Protection Measure for the National Pollutant Inventory' was undertaken by Professor Ian Rae in 2000. The review found that industry was generally aware of the database and its requirements. Similar results were identified in a review of the NPI undertaken in 2005 which reported that 'the NPI has delivered benefits to, and met the needs of a range of groups and provided information for a wide variety of purposes' (Department of the Environment and Heritage 2005, p. v).

[27] However, as discussed in 4.5.4 the NPI is considered to be primarily a quantitative source of emission information (Sullivan 1999) with the quality of contextual information being questionable (Howes 2001).

[28] URL links to company-sponsored websites.

The 2005 review identified a variety of users of the NPI including government, industry, community organisations, financial institutions, research organisations and individuals; however, the 2000 review expressed some concern regarding the lack of knowledge regarding the NPI by the general community. As a consequence, the review recommended additional expenditure on a public awareness campaign to increase use of the database to achieve the objectives of the NEPM. Community knowledge of the database continues to remain of concern with the 2005 review again stating that 'public awareness programs which promote use of the NPI to a wider audience and better serve the community right to know objective' were an area for 'priority attention' (Department of the Environment and Heritage 2005, p. v). The possible reasons for limited community awareness include lack of expenditure on public awareness campaigns, mistrust of the data by lobby groups, the complexity of the information in its existing format, and a lack of contextual information to enable users to understand what the data means (Department of the Environment and Heritage 2005).

While concerns remain regarding the extent of community knowledge of the database, early interest in the NPI is evidenced in the number of users accessing and downloading the database in the initial six months of its publication from February to July 2000 as displayed in Table 3[29].

Table 3: NPI access data in the first six months of publication

Month (2000)	*Number of hits*	*Number of reports requested*	*Number of Excel files downloaded*
February	35364	11083	412
March	20318	6309	114
April	14608	4101	89
May	20752	6180	151
June	20419	13149	121
July	10211	5412	101

(Source: National Environment Protection Council 2002, p. 15)

[29] Table 3 provides a summary of all "hits" on the database including return visits by users.

This level of interest has increased with the number of unique visits[30] to the NPI Internet site increasing from 1794 in the 2001/2002 reporting year to 62 256 in the 2003/2004 reporting year (Department of Environment and Heritage 2005, p. 13).

Initial reports suggested the NPI was achieving its goal of being 'an impetus for cleaner production for industry' (Environment Australia 2000)[31]. Some facilities that reported in the first two consecutive years showed reductions in emissions even though no reduction in production levels had occurred (Hill 2001). Similar results were noted in the 2000/2001 reporting year. In the first year of operation, 1998/1999, approximately 1200 entities reported on the database. In the third year of operation 2356 facilities were reporting on the NPI covering seventy-eight industry sectors. In 2003/2004 3618 facilities were reporting.

As a part of the 2000 review undertaken by Professor Ian Rae, a small number of annual reports and stand-alone environmental reports were examined for disclosures regarding the NPI[32]. The reports of WMC Ltd, Orica Ltd, Pasminco Ltd, Australian Vinyls Ltd and BASF Australia Ltd were examined from 1999 and 2000. WMC Ltd reported information on the NPI in both its annual report and its stand-alone environmental reports. The other companies mentioned emissions, and in particular, improvements in performance and reductions in emissions, and to a lesser extent, the NPI in the stand-alone reports; however, based on the information provided in the report, the companies did not discuss these issues in the annual report. The report concludes that, while it is difficult to claim a causal relationship, there 'seems no reason not to ascribe some of the credit to the Measure and the knowledge that NPI reporting requirements were imminent' (National Environment Protection Council 2002, p. 19).

The introduction of the NPI represents a changing operating environment for polluting firms. The external publication of pollution emission information on a public medium such as the Internet provides interested users within the community with information that was previously difficult to obtain. Previous empirical research investigating corporate annual report disclosure responses to the public release of (negative) environmental performance information have reported that the firm may respond by increasing environmental disclosures

[30] The Department of Environment and Heritage (2005, p. 13) defines a "unique visit" as 'the first access to the web site by a computer. Further access by the same computer is not counted'.

[31] Although it is difficult to identify that such changes were directly attributable to the NPI.

[32] No details are given on the actual sample size; however, only the reports of five companies are discussed being WMC Ltd, Orica, Pasminco Ltd, Australian Vinyls and BASF Australia.

in annual reports in order to legitimise its activities to the community in which it operates (Deegan, Rankin & Voght 2000; Deegan & Rankin 1996; Patten 1992).

Patten (2002b) examined changes in environmental disclosures in 10K reports from 1985 to 1990 for US firms with emissions disclosed on the 1988 TRI. A significant increase in the quantity of environmental disclosures during the period was identified. Furthermore, changes in quantities of disclosures were found to be significantly related to the level of emissions reported on the TRI. More importantly, Patten argues that the changes in disclosures occurred even though information regarding the TRI was not well reported in the national media. Consequently, Patten (2002b, p. 168) argues 'that substantial media exposure is not necessary to induce public policy pressure related changes in environmental disclosures'. Therefore, a contribution of this thesis will be to examine, in comparison with Patten (2002b), whether there is a relationship between the level of emissions on the NPI and the quantity of voluntary environmental disclosures in annual reports.

Previous research undertaken in the field of environmental disclosures in annual reports has focussed on the quantity of disclosures, the relationships between disclosures and environmental events, and the positive/negative nature of environmental disclosures. Limited research has examined how companies report on the occurrence of particular environmental events. Consequently, the introduction of the NPI provides an opportunity to further investigate the discretionary nature of voluntary environmental disclosures in annual reports. This will be achieved by examining whether a change in environmental reporting regulation, which is not directly applicable to the annual report, acts as a driver for change in annual report voluntary environmental disclosure practices by companies. This thesis will not only examine changes in the quantity of annual report disclosures during the introduction of the NPI but also, adopting a micro approach, the information content of disclosures relating to the NPI and pollution/emissions during its implementation period.

2.7 Background to Mandatory Environmental Reporting in Australia

As discussed earlier in this chapter, Australian corporations have been disclosing social and environmental information in annual reports for several decades. These voluntary disclosures, however, were criticised for being self-laudatory and lacking completeness particularly in regard to the negative aspects of a company's environmental performance

(Deegan & Gordon 1996; Deegan & Rankin 1996). These findings are of concern as, according to some organisations, the environmental performance of Australian corporations remains questionable.

The Australian Conservation Foundation published an annual 'Perception Report' on the environmental performance of Australia's top 100 companies. The *Age* and *Sydney Morning Herald* used the results as part of the environmental section in the annual Good Reputation Index[33]. The first Australian Conservation Foundation report published in 2000 (p. 2) identified the following perceptions of the performance of these companies:

1. Corporate Australia in the main is currently failing to fulfil its environmental responsibilities;
2. There are positive signs that corporate Australia's poor environmental performance could be reversed in the coming years;
3. Many companies, indeed entire corporate sectors, have failed to recognise and act on their environmental responsibilities;
4. Many companies have failed to fully translate what on paper appear to be best practice environmental strategies to their "on the ground" environmental performance, and;
5. Many Australian companies have failed to bring in the same standard of environmental strategies and initiatives as those used by their overseas parent companies. This is symptomatic of a wider trend that sees corporate Australia lagging behind overseas corporations on a wide range of environmental issues.

The ACF prepared a follow-up report in 2001 which used the perceptions listed above as a benchmark for the overall performance of the top 100 listed companies in 2001. The ACF's perceptions remained unchanged for all points excepting point 3 where it was noted that some improvement had occurred in the financial sector. In a similar report addressing both the social and environmental performance of the top 50 listed companies it was again found that 'improvements in corporate policy and sustainability reporting are frequently not reflected in on the ground performance' (Australian Consumers Association, Australian Conservation Foundation & Oxfam Community Aid Abroad 2004, p. 34). Coupled with the concerns expressed over the quality and content of annual report disclosures, the results of the ACF's investigations over time suggests that calls for environmental disclosures to be

[33] The index is now managed by Reputex (see https://secure1.impactdata.com.au/reputex/public2/s_news_articles_DEC.asp?menu=5).

regulated could not be dismissed. Consequently, the regulation of voluntary environmental disclosure practices remains an important issue.

While much research during the past decade has focussed upon annual report environmental disclosures (O'Donovan 2002; Tilt 2001; Deegan, Rankin & Voght 2000; O'Donovan 1999; Deegan & Rankin 1997; Deegan & Gordon 1996; Deegan & Rankin 1996; Tilt 1994), there have been very few comparative studies of voluntary environmental disclosures within and without regulated disclosure requirements. Guthrie and Parker (1990) examined corporate annual reports from the fifty largest listed companies in the US, the UK and Australia in 1983. Content analysis was used to examine social disclosures in categories including the environment, energy, human resources, products and community involvement. These categories further covered the type of disclosure, that is, monetary, non-monetary, declarative or none, the amount of disclosures as measured by pages, and the location in the annual report.

The underlying basis of the research was to undertake a comparison of the quantity and quality of the social disclosures between the three countries. Overall, the UK companies provided more social disclosures (98 per cent of reports), followed by the US (85 per cent of reports) and finally Australia (56 per cent of reports). The US disclosures were distributed across many categories with human resources (75 per cent of companies making disclosures), community involvement (63 per cent of companies making disclosures) and the environment (53 per cent of companies making disclosures) being the most frequently discussed. United Kingdom disclosures were concentrated on human resources (98 per cent of companies making disclosures) and community involvement (96 per cent of companies making disclosures), while many Australian disclosures were in the human resources category (93 per cent of companies making disclosures). Only 14 per cent of UK companies made disclosures on the environment with 21 per cent of Australian companies disclosing on this issue (Guthrie & Parker 1990, p. 164).

Focussing on the nature of environmental disclosures, the US sample companies provided the highest level of negative disclosures on the environment being 22 per cent of annual reports. When compared to the UK with only two per cent and Australia with less than one per cent, a significant difference between environmental reporting practices of the three countries is apparent (Guthrie & Parker 1990, p. 169). Guthrie and Parker (1990, p. 170) attributed this to

the higher level of regulations in the United States pertaining to environmental and social disclosure requirements in annual reports:

> The congruence of apparent importance attached to human resource, community, and environmental impact information across the three countries' reports suggests a response to consistent demands for such information by decision makers. A significant proportion of U.K. and U.S. corporate 'bad news' disclosures appear to be made at the instigation of government or private (accounting profession) regulation. Such disclosures represent a direct response to imposed social priorities.

The companies not only were disclosing greater levels of "good news" in the annual reports but were also disclosing the majority of the "bad news" in the audited sections of the reports. Good news was mainly reported in the voluntary sections and was perceived to be an attempt by companies to inform users of the reports that the companies were minimising the negative impact on the environment, the employee, or the community by its operations. Guthrie and Parker (1990, p. 171) suggest that the high levels of voluntary social disclosures may be an indication that such disclosures 'may delay, avoid, or indeed set the agenda for the imposition of regulated social disclosures'. If a corporation does not succeed in its attempts to legitimise through disclosures the risk of government intervention may be increased (Wilmshurst & Frost 2000).

Internationally, legislation particularly relating to mandatory environmental disclosure is increasing. In 1995, the Danish Parliament adopted the *Green Accounts Act* in response to an increase in community and public concern over environmental issues in Denmark during the 1980's and 1990's.

> With increasing environmental awareness and more focus and pressure on enterprises causing high levels of pollution, it was natural to introduce annual green accounts which reflect their environmental performance. The basic idea was that annual environmental accounts made available to the public would, in itself, motivate enterprises to make continuous environmental improvements.
> (Danish Environmental Protection Agency 2000, p. 2)

From its inception, the Act required heavily polluting enterprises to publish green accounts. The green accounts are required to discuss:

- the primary and significant secondary activities of the entity;
- the most important environmental permit to which the entity is subject;
- the authority under which the permit is supervised;
- a qualitative description of the resources and environmental parameters linked with the above-outlined activities of the entity;
- significant deviations from previous green accounts submitted;
- who amongst entity staff has prepared the green accounts;
- information on polluting substances used and potential risks of those substances.

If the green accounts have been audited by an expert the entity must disclose a copy of the auditors' opinion and the name of the auditor. In addition, a statement must be included regarding:

- major consumption of water, raw materials and energy;
- significant types and volume of pollutants relating to the production process, products, waste or discharged by the enterprise.

(Danish Environmental Protection Agency 2000).

The philosophy of the green accounts appears to allow some freedom to managers on the way the accounts are prepared. The framework is described as being that:

> …an enterprise should be master of its own accounts – in other words, each enterprise should be free to decide how to present its environmental profile, and management should be free to formulate environmental priorities and goals.
> (Danish Environmental Protection Agency 2000, p. 1)

Mandatory environmental and social reporting is also required in France. Listed companies are now required to publish information in annual reports regarding:

- resource and energy use and consumption;
- greenhouse gas emissions;
- efforts relating to the reduction of environmental risks;
- cooperation with communities, non-government organisations and trade unions;
- the company's effect on biodiversity.

(Euractiv 2002)

Other European countries also have reporting requirements, although less stringent than those required in Denmark and France. Swedish firms that need an environmental permit must include some environmental information in the annual report (Kolk 1999). In Norway, entities that have a significant environmental impact must mention how the environment is affected in the annual report[34]. The entity is also required to discuss any measures undertaken in regard to that impact (Kolk 1999).

The UK Government introduced legislation on mandatory environmental reporting effective from 22 March 2005. The introduction of the requirement in the UK *Companies Act 1985* to prepare a compulsory Operating and Financial Review (OFR) stated that from 01 April 2006 (Schedule 7ZA 4 (1)) quoted companies 'must include (a) information about environmental matters (including the impact of the business of the company on the environment)'. Information provided in accordance with the requirement would be audited according to s. 236 (3A) of the Companies Act. The requirement to produce the compulsory OFR was subsequently repealed by the Chancellor of the Exchequer effective from 12 January 2006. The basis for the repeal was that the requirements for the mandatory OFR were similar to (although more extensive than) the requirements of the Business Review, which included provisions of the EU Accounts Modernisation Directive requiring certain information to be included in the directors' report (Accounting Standards Board 2006). Consequently, the additional reporting requirements in the OFR were considered to be against the UK Governments 'general policy not to impose regulatory requirements on UK businesses over

[34] The Norwegian Accounting Standards Board outlines eight principal issues which should be reported upon including quantity of energy and raw materials, type and amount of waste and emissions, transportation emissions, accidents, and the impact of the company's products through use and disposal (Nyquist 2003).

and above the relevant EU Directive requirements' (Accounting Standards Board 2006, p. 4). Companies, excluding small and, in general medium companies, are now required to only include in the directors' report the less stringent Business Review as per s. 234ZZB(3)(b) which:

> …must, to the extent necessary for an understanding of the development, performance or position of the business of the company, include – where appropriate, analysis using other key performance indicators, including information relating to environmental matters and employee matters.

The Accounting Standards Board[35] released a Reporting Statement upon repeal of the OFR requirements. Although the reporting statement lacks mandatory status, it does recommend that companies continue to prepare a voluntary OFR and that the now-repealed requirements be considered an example of best-practice (Accounting Standards Board 2006). The Department of Trade and Industry (DTI)(2005) also recommends that medium-sized companies exempted from the new requirements in s. 234ZZB(3) include the information in a voluntary OFR 'in recognition of the benefits such disclosure brings to the operation of the business'.

2.8 Section 299(1)(f) of the Corporations Law

Within the Australian reporting environment there was a notable absence of legislation prior to 1998 pertaining to the disclosure of environmental information in corporate annual reports. A *Corporation and Securities Industry Bill* was supported by the Australian Government House of Representatives in the 1970's but was not processed through the lower house due to a change in Government (Trotman & Bradley 1981). Legislation relating to non-financial corporate environmental disclosure was subsequently destined to remain out of the political landscape until the end of the 20th Century.

Senator Andrew Murray of the Australian Democrats proposed amendment 37 to include s. 299 (1)(f) in the Australian Corporations Law during the process of the *Company Law Review Act 1998.* The section was not initially included in the review but a late amendment

[35] The Accounting Standards Board is an operating board of the Financial Reporting Council and had statutory power for the development of reporting standards for the OFR (Accounting Standards Board 2006).

was subsequently supported by the Australian Labor Party. In expressing the Democrat's motivation for including the amendment Senator Murray stated:

> The reason we [include the amendment] is not just our well-known attachment to environmental matters, but the fact that many companies are materially affected financially in terms of environmental situations. I think we only have to recall some of BHP's financial consequences for environmental matters to be well aware of that.
> (Senate Hansard 1998, p. 4014)

In support of the amendment, Senator Murray referred the Senate's attention to a progressive environmental progress report provided by Hugh Morgan, the Managing Director of WMC Ltd. Attention was also drawn to a publication by the Institute of Chartered Accountants in Australia:

> [the publication] is called *Leadership.* It is a discussion paper which was issued in January 1998, so it is current. It talks about the impact of environmental matters on the accountancy profession… It says that more than two-thirds of users seek disclosure of environmental information in the annual report. It says that less than 10 per cent of preparers see environmental reporting as a threat to their company – in other words, they are not concerned about it. It says that 50 per cent of preparers do not support mandatory disclosure…however, 64 per cent of users would support an approach to have environmental matters included in annual reports.
> (Senate Hansard 1998, p. 4014)

The section requires companies to disclose information on environmental performance in their annual reports from 1 July 1998. While many criticisms have been made of the section (Baird 2000), its inclusion represented a new stage in corporate environmental reporting in Australia[36].

The section applies to public companies and large proprietary companies. A public company means a company other than a proprietary company and:

[36] Section 1013D was also amended to the Corporations Act in 2001 requiring those regulated to provide financial product advice to provide clients with a Product Disclosure Statement and include (l) 'if the product has an investment component – the extent to which labour standards or environmental, social or ethical considerations are taken into account in the selection, retention or realisation of the investment'.

(a) in section 195 and Chapter 2E, includes a body corporate (other than a prescribed body corporate) that:

(i) is incorporated in a State or an internal Territory, but not under this Act; and

(ii) is included in the official list of a securities exchange; and

(b) in Chapter 2E does not include a company that does not have 'Limited' in its name because of section 150 or 151.

Large proprietary companies are defined within the Corporations Act as those that meet at least two of the following criteria:

- a gross operating revenue of AUD$10 million or more for the year;
- gross assets of AUD$5 million or more at the end of the year;
- fifty or more employees at the end of the year.

According to s. 299 (1)(f) the company's directors' report for the financial year must:

> If the entity's operations are subject to any particular and significant environmental regulation under a law of the Commonwealth or of a State or Territory – give details of the entity's performance in relation to environmental regulation.

Following the amendment, there was some confusion due to the ambiguity of the requirements, particularly the meaning of the terms 'particular' and 'significant', and the failure to include the word 'disclose' prior to 'details of the entity's performance' (Deegan 1999)[37]. These issues were particularly important in light of the penalty for non-compliance of the section. Under ss. 344(1) and 1317G of the Corporations Law, a person in contravention of the requirements of s. 299 (1)(f) could result in penalties of up to $200 000.

To provide guidance on the operation of s. 299(1)(f) the Australian Securities and Investment Commission (ASIC) issued Practice Notes 68 paragraphs 72 through 75. Practice Note 68, paragraph 74 provides the following general guidelines for the environmental reporting requirements:

[37] The latter criticism was based on the wording of the original amendment. The word 'give' has subsequently been included.

(a) Prima facie, the requirements would normally apply where an entity is licensed or otherwise subject to conditions for the purposes of environmental legislation or regulation;

(b) The requirements are not related specifically to financial disclosures (eg. contingent liabilities and capital commitments) but relate to performance in relation to environmental regulation. Hence, accounting concepts of materiality in financial statements are not applicable;

(c) The information provided in the directors' report cannot be reduced or eliminated because information has been provided to a regulatory authority for the purposes of any environmental legislation;

(d) The information provided in the directors' report would normally be more general and less technical than information which an entity is required to provide in compliance reports to an environmental regulator.

Practice Note 68 paragraph 75 states that companies should comply 'with the spirit as well as the terms of the law'. This was consistent with a submission by ASIC to the subsequent Parliamentary Joint Statutory Committee on Corporations and Securities (Commonwealth of Australia) hearings[38]. The submission expressed leniency in prosecutions for the early stages of the introduction of the section:

> ASIC would take what we called a rather light handed approach to the matter to begin with. We thought it was important that people complied with the spirit of the provision and made a serious attempt to disclose something meaningful, but we would monitor what was disclosed.

The Australian Industry Group opposed the section. The AIG (1998) had previously expressed an opposition to mandatory environmental reporting in Australia[39] and criticised the

[38] The general duties of the PJSC were set out in s. 243 of the *Australian Securities and Investments Commission Act 1989* (now the *Australian Securities and Investments Commission Act 2001*). In this case, the PJSC was asked to examine matters (including the proposed inclusion of s. 299(1)(f) in the Corporations Act) arising from the Company Law Review Act 1998 (Commonwealth of Australia 1999).

[39] The general attitude of business and industry organisations does not appear to have altered substantially. For example, the Business Council of Australia (BCA) expressed opposition to mandatory corporate responsibility legislation in its submission to the Parliamentary Joint Committee on Corporations and Financial Services (PJC) into corporate responsibility in 2005 arguing that market forces would determine the amount of social responsibility entities should undertake (BCA 2005). The terms of reference of the PJC were to conduct an inquiry into Corporate Responsibility and Triple-Bottom-Line reporting for profit and non-profit incorporated entities in Australia (PJC 2006).

lack of consultation prior to the section's introduction and the ambiguous nature of the wording of the section. In defending their stance against mandatory reporting the AIG argued 'mandatory reporting is being introduced despite there being no evidence the current voluntary reporting has been unsuccessful' (AIG 1998). Regardless of this opposition, the AIG released guidelines on reporting under s. 299 (1)(f). The AIG (1999, p. 2) recommend companies to limit the reporting to one to two pages and:

- voluntary and mandatory be kept separate in the annual report (1999, p. 3);
- providing excessive information may detract from the importance of other information required in the annual report (1999, p. 2);
- information required for s. 299 (1)(f) will be less detailed than the information which would appear in the detailed voluntary environmental report and should be limited to general information (1999, p. 3).

Of interest in the recommendations by the AIG is the suggestion that companies adopt a minimalist reporting approach in the mandatory sections and provide greater levels of information in the voluntary sections. Such an approach to mandatory requirements was predicted by Guthrie and Parker (1990, p. 172) who suggested that under a mandatory disclosure system corporations 'may choose to disclose such information only to the minimum degree required to subdue the calls for further disclosure or regulation'.

The AIG also addressed the issue of 'significance' by advising that companies should interpret the term in a broad sense and relate it to the extent of risk as determined by the company's directors. Apart form these points the AIG continued to promote its support and preference for the use of voluntary environmental reporting in annual reports to 'identify environmental achievements and where future improvements are required' (Australian Industry Group 1999).

The amendment to the Corporations Law immediately attracted criticisms with the Australian Liberal National Coalition government expressing its opposition to the section. On the 10th July 1998 the Treasurer, Peter Costello referred s. 299 (1)(f) to the PJSC along with several other matters. It was one of three amendments during the proceedings of the *Company Law Review Act 1998* opposed by the Government. Submissions to the PJSC relating to s. 299

(1)(f) were outlined in the Senate Committee Report. Forty-six submissions were received with forty of those expressing opposition to the section.

The arguments received in favour of the provision were discussed after those against. These arguments were listed under the name of the organisations submitting the arguments. Greenpeace Australia suggested that the current voluntary system is inadequate and urged that the section be retained with additional guidance for compliance provided by ASIC. Greenpeace indicated that the additional pressure and the potential for penalties placed upon company directors will act as a stimulus for improvement in environmental performance and disclosure practices (Commonwealth of Australia 1999).

The Environmental Defender's Office Ltd (EDOL) also supported the general arguments against the success of the voluntary reporting system discussed by Greenpeace. The EDOL focused on the information-usefulness to stakeholders including economically and/or environmentally motivated investors, environmental regulators, and the general public.

After considering the submissions, which were heavily weighted against the retention of the section, the PJSC recommended that s. 299 (1)(f) be deleted from the Corporations Law. In justifying the decision to support the majority of submissions the PJSC stated that the environmental groups had 'put different views to the above conclusions. These views were not as persuasive as those from the business community' (Commonwealth of Australia 1999).

In making the recommendation the PJSC report outlines the following points:

- It is inappropriate for the Corporations Law to require inclusion in the annual directors' report of details of performance in relation to environmental regulation (relating to submissions by R I Barrett, the Australian Society of Certified Practicing Accountants (ASCPA), the Institute of Chartered Accountants in Australia (ICAA), and the Chartered Institute of Company Secretaries (CICS) W.A);
- Environmental reporting is not a matter which relates to the Corporations Law (relating to submissions from Freehill Hollingdale and Page (Perth), the AIG, the Australian Institute of Company Directors (AICD), the National Association of Forest Industries (NAFI), J A Sutton, the Australian Chamber of Commerce and Industry (ACCI), Blakiston and Crabb, T Walshaw, and Rio Tinto Limited);

- Why should environmental performance be singled out as a worthwhile performance indicator? (relating to submissions from the Australian Law Reform Commission, Arnold Bloch Leibler, the AIG, Corrs Chambers Wesgarth, KPMG, ASCPA, ICAA, R I Barrett, T Walshaw, and Ernst and Young (Melbourne));
- Mandatory reporting of environmental performance may be unproductive and voluntary reporting would encourage better companies to achieve best practice and the market would adversely deal with companies that lag (relating to submissions from the Australian Law Reform Commission, Blakiston and Crabb, the ASCPA, ICAA, and the CICS W.A, the Australian Listed Companies Association Incorporated, the Australian Institute of Petroleum, the Australian Petroleum Production and Exploration Association (APPEA), Rio Tinto Limited, the AIG, and the NAFI);
- The provision is vague and uncertain and lacks any safeguards (relating to submissions from Allen, Allen and Hemsley, the Henry Walker Group, the CICI, the AIP, Esso Australia Resources Limited, Ernst and Young (Sydney), the Australian Business Chamber, the Association of Mining and Exploration Companies Incorporated (AMEC), the AICD, Siddons Ramset Limited, and Freehill Hollingdale and Page (Perth);
- Companies already have to disclose material effects. Additional information provided by s. 299 (1)(f) is non-material and is being reported up to a year after the event (relating to submissions by Freehill, Hollingdale and Page W.A., Bristile Limited, the AMEC, and Blakiston and Crabb);
- The requirement only applies to operations in Australia, excludes overseas operations and focuses environmental reporting only upon those legal structures formed under the Corporations Law rather than all legal structures (Freehill Hollingdale and Page W.A., R I Barrett, the APPEA, Esso Australia Resources Limited, and Rio Tinto);
- Duplication of existing Commonwealth and State environmental reporting requirements add additional unnecessary costs (relating to submissions by I Cochrane, the Henry Walker Group, J Wilkin, the Australian Institute of Petroleum, the AIG, the Australian Business Chamber, the Victorian Minister for Fair Trading, T Walshaw, the AMEC, Gunns Limited, the ACCI, the AICD, and the APPEA).

It was suggested that the quality of the information provided in the mandatory sections of the report would not be as good as that provided in the voluntary sections. Considering the

international experience, this argument is questionable. Bebbington (1999) investigated the effect of the introduction of mandatory environmental reporting in Denmark. In the first year the quality of the information *was* questionable with only seventeen percent of companies providing information of a high quality, the remainder providing basic information (Bebbington 1999, p. 3). It was noted that the *quality of the reports increased* between the first and second years. Firms preparing green accounts were found to experience a positive economic, environmental or organisational benefit as a result of the environmental reporting process. Of particular importance was the acknowledgement by several companies that mandatory reporting had acted as an impetus for improved or new environmental policies.

Also submitted to the PJSC in October 1999 were the Minority Reports from the Australian Democrats and the Australian Labor Party. The Democrat's indicated that their motivation for inclusion of s. 299 (1)(f) was 'not to promote greater social responsibility by Australian corporations, but was primarily directed to alerting shareholders to the financial risks that might attach to a company's environmental practices' (Senator Andrew Murray 1999). The reference by the report to 'identifying material financial risk' is in contrast to Practice Note 68 paragraph 74 which states that the information to be provided is not limited to that which is considered material under accounting conventions. Still, the Democrat's recommended that the section remain in the Corporations Law or alternatively, be amended to 'ensure there is no doubt that disclosure is directed to exposing financial risk' (Senator Andrew Murray 1999). The Australian Labor Party also supported retention of the section (Australian Labor Party 1999).

Despite the recommendation of the PJSC for its repeal the section remains in place. Section 299(1)(f) was proposed for repeal in the exposure draft of the *Corporations Amendment Bill 2002* which included amendments relating to the *Report on Matters Arising from the Company Law Review Act 1998* of the PJSC (Commonwealth of Australia 1999). The second draft of the *Corporations Amendment Bill (No. 2) 2005*, however, no longer repealed s. 299(1)(f). According to the explanatory memorandum to the subsequent *Corporations Amendment Bill (No. 2) 2006* the amendment to repeal the section was withdrawn 'following consideration of submissions received'.

It has been expected that the inclusion of s. 299(1)(f) will result in companies that had previously not disclosed environmental information now doing so (Deegan 1999). KPMG (1999) also argue that mandatory reporting requirements play an important role in increasing

corporate environmental disclosures. The results of their survey show that environmental reporting in Denmark increased from eight per cent to 29 per cent between 1996 and 1999 (KPMG 1999, p. 17). They attribute this increase to the introduction of reporting legislation in 1996, although no clear distinction is made between what are voluntary and what are mandatory disclosures, nor the quality of such disclosures. The report also identified Australian companies as being slower to adopt new reporting techniques[40].

In an international comparison, Guthrie and Parker (1990) identified greater detail in environmental disclosures in countries where disclosure legislation exists. Mandatory reporting legislation is a relatively new phenomenon in Australia, and limited research has been undertaken on its effect on the disclosure practices of corporations. Deegan (2000a) undertook an ad hoc examination of annual reports following the introduction of the section and noted differences in the style of compliance in mandatory disclosures between companies and industries.

In its early stages the section, as would be expected, was effective in increasing the number of companies disclosing environmental compliance information in the statutory section of the annual report. In an exploratory study, Frost (2001) examined annual reports of seventy-one companies to identify the number of companies reporting on compliance with environmental regulation, information regarding breaches of regulations and whether the disclosure was located in the voluntary or statutory section of the annual report. The total quantity (in words) of environmental disclosures, s. 299(1)(f) disclosures and negative environmental disclosures[41] was also identified in order to determine whether the section had an incremental effect on environmental reporting overall. Annual reports for the two pre-operative periods and the first two post-operative periods were examined. An increase in the number of companies discussing requirements to comply with, and environmental performance with respect to, environmental regulations in the statutory section of the annual report was noted. An increase in the number of companies reporting the existence of breaches also occurred

[40] Such as the production of stand-alone environmental reports.

[41] Total environmental disclosures, s. 299(1)(f) disclosures and total negative environmental disclosures (in words) comprised both voluntary and mandatory disclosures. Frost (2001) does not provide a differentiation of the quantity of disclosures appearing in the two sections of the annual report. Although the section requires disclosure in the directors' report, Frost argued that the AIG (1999) had stated that the information could be located in any part of the annual report provided that it was referred to in the directors' report; however, Practice Note 68 paragraphs 72 through 75 refer only to disclosures being included within the directors' report (ASIC 1998). The approach adopted by Frost is inconsistent with previous research which has examined voluntary and/or mandatory disclosures separately (Deegan, Rankin & Tobin 2002; Deegan, Rankin & Voght 2000; Deegan & Gordon 1996; Deegan & Rankin 1996; Guthrie & Parker 1990).

although the number of companies providing specific details on same was minimal. The total quantity of environmental disclosures, s. 299(1)(f) disclosures and negative environmental disclosures (in words) also increased significantly from the first pre-operative period to the first post-operative period both for companies that had reported breaches, and those that did not report breaches, of environmental regulation. Frost (2001, p. 17) acknowledges, however, that 'most of the increased disclosure related to information interpreted as required by the provision'. Notwithstanding the proposed deletion of s. 299 (1)(f), many companies chose to comply. Concluding that s. 299 (1)(f) had been 'effective in increasing the level [*sic*] information disclosed on performance related to environmental regulations', Frost (2001, p. 15) also suggested that companies were still obviously confused about the reporting requirements.

Section 299(1)(f) appears to have resulted in an increase in the number of companies disclosing information relating to requirements to comply with, and performance in regard to, environmental regulation in the statutory section of the annual report; however, previous research examining corporate voluntary environmental disclosures in annual reports has found that disclosures prior to s. 299(1)(f) were generally *positive* with little negative information provided, regardless of the nature of the issue being discussed[42]. Several researchers have suggested that the use of positive disclosures in this way is an attempt by the corporation to legitimise itself. The introduction of mandatory disclosure requirements in the annual report could be seen as restricting the ability of the company to utilise self-puffery to stakeholders. Within the mandated directors' report companies are required to be factual and it would be expected that opportunities for self-puffery would be restricted; however, the section is only operative in the statutory directors' report. Corporations are still able to report freely on environmental performance in the voluntary sections of the report that are not subject to audit or regulator scrutiny[43]. As discussed earlier in this chapter, s. 299 (1)(f) was introduced, in part, following concerns regarding the quantity, quality and content of environmental

[42] While Frost (2001, p. 16) found an increase in the quantity of negative disclosures in annual reports following the implementation of the section, the average quantity of negative disclosures for companies that reported breaches pursuant with the requirements of the section was 79 words with average total environmental disclosures being 710 words. Although Frost does not identify the nature of the remaining disclosures (that is neutral or positive disclosures), his findings do suggest that the proportion of negative disclosures to other disclosures remains minimal.

[43] Section 298(1) of the Corporations Act requires companies to prepare a directors' report each financial year. Section 301(1) requires the annual financial report of a company to be audited and an audit report obtained. There is no requirement in the Corporations Act for the s. 299 disclosures to be audited. This is in contrast to the requirements in the UK Companies Act s. 235(3) which requires audit of the directors' report. Sections 314 and 319 of the Corporations Act require the financial report, directors' report and auditor's report to be sent to members and lodged with ASIC. The determination of compliance with s. 299(1)(f) is the responsibility of ASIC.

disclosures in annual reports. It would seem that while there remains no restriction on the content of disclosures made elsewhere in the annual report, the reliability of environmental performance information provided in the annual report overall might remain questionable[44].

As discussed in this chapter, a principle motivation for the introduction of s. 299(1)(f) was to provide reliable information for the decision-making purposes of users of the annual report. While the section is a mandatory reporting requirement, disclosures pursuant to s. 299(1)(f) will be presented in the annual report which often also contains voluntary environmental disclosures. Taking into consideration the discretionary nature of the voluntary disclosures, as evidenced from research prior and post the introduction of s. 299(1)(f), it may be speculated that the existing voluntary and mandatory annual report disclosure system could limit the usefulness of mandatory disclosures. Therefore, the introduction of s. 299(1)(f) provides an opportunity to examine whether corporations required to disclose non-compliance with environmental regulations in the annual report have different voluntary disclosure practices (quantity and nature of disclosures) than those reporting compliance.

2.9 Chapter Summary

Continued community and government concern regarding environmental issues, and a focus on community right-to-know, contributed to the introduction of the NPI in 1998. The NPI provides the Australian community with information on the pollution emissions of entities that exceed the thresholds outlined by the Inventory. The NPI is an annual public disclosure of corporate environmental performance on the Internet.

As discussed in this chapter, previous research has shown that corporations increase the quantity of voluntary environmental disclosures in annual reports following the external publication of environmental performance information which may be perceived to be negative (Deegan, Rankin & Voght 2000; Deegan & Rankin 1996). In addition, a relationship has been identified between environmental performance and disclosure levels with poorer environmental performers often having greater quantities of voluntary environmental disclosures (Al-Tuwaijri, Christensen & Hughes 2004; Patten 2002b; Li, Richardson &

[44] It should also be noted that no indication has been provided by ASIC as to whether information provided in the voluntary sections of the annual report will satisfy the requirements of s. 299(1)(f). This is also in contrast to what appears to be acceptable practice in the UK. The UK Department of Trade and Industry (2005, p. 4) states that in its view 'it is acceptable to cross refer in the Business Review section of the Directors' Report to information in a voluntary OFR, provided that they are published together in such a way that users can easily refer to both documents'.

Thornton 1997; Patten 1992). Several studies have identified that the content and quality of the environmental disclosures in annual reports has been questionable, with high levels of positive disclosures particularly for corporations that have experienced a negative environmental event or adverse publicity from environmental information that could be perceived as negative (Deegan, Rankin & Voght 2000; Deegan & Rankin 1996). In particular, Patten (2002b) examined the relationship between levels of emissions on the US TRI and environmental disclosures in annual reports. He found that corporations with greater levels of emission disclosures on the TRI had greater quantities of environmental disclosures in annual reports.

There has been a notable absence of publicly disclosed environmental performance information within the Australian corporate landscape in the past. During the implementation period of the NPI it was suggested that the public disclosure of emission information by a government body would act as a stimulus to improvements in processes and reductions in emissions. Hence, publication was expected to increase community pressure on polluting entities which, in turn, would result in a response by those entities to implement change in environmental practices. Previous research has identified that corporations react to negative media attention by increasing the quantity of voluntary disclosures in annual reports, and that such disclosures are mostly of a positive nature. Therefore, it is possible to suggest that changes in environmental regulation may not only result in changes in environmental performance but also may result in changes in voluntary disclosure practice. That is, the introduction of new environmental regulation may act as a stimulus to changes in the quantity and/or content of annual report voluntary environmental disclosures.

Also, in 1998 was the amendment to the Corporations Law to include a new mandatory annual report environmental disclosure requirement. Section 299(1)(f) requires corporations to include in the directors' report of the company annual report details as to their compliance with environmental regulations. Industry and the existing Government were opposed to the section and it was subsequently recommended for repeal. The opposing groups suggested the current voluntary approach was sufficient for environmental disclosure. Furthermore, there was a perceived risk of negative impacts on the competitive advantage of Australian corporations; however, the section remains in the Corporations Act and companies are required to comply with its requirements.

A principal motivation for the introduction of the section was to provide users of annual reports with information on corporate environmental performance. Prior to the introduction of the section the provision of environmental information in annual reports was predominantly voluntary. The literature discussed in this chapter identified an increase in the quantity of voluntary environmental disclosures appearing in corporate annual reports since the 1960's (Guthrie & Parker 1989; Kelly 1981; Trotman & Bradley 1981; Trotman 1979). This increase corresponded with changing community and societal values toward the environment and the importance placed on it by the Australian community (Australian Bureau of Statistics 2004; Lothian 1994).

Research into the demand for environmental information provides evidence that it is of use to stakeholders (Collison, Lorraine & Power 2003; Epstein & Freedman 1994; Tilt 1994) and a useful tool for managers to communicate to stakeholders (O'Donovan 1999). It has been found that corporations providing greater quantities of environmental disclosures experience less negative market reactions where there has been adverse attention following an environmental disaster or the release of negative environmental performance information (Freedman & Patten 2004; Blacconiere & Northcutt 1997; Blacconiere & Patten 1994). Hence the provision of voluntary environmental disclosures in annual reports has been identified as potentially beneficial to corporations.

While an increase in quantity of voluntary environmental disclosures occurred, the quality and reliability of voluntary environmental disclosures in annual reports to users has, at times, been questionable. Previous authors have suggested the disclosures lack credibility (Deegan & Gordon 1996; Deegan & Rankin 1996), may be misleading (Deegan & Rankin 1996) and provide limited useful information to users (Hughes, Anderson & Golden 2001; Tilt 1994). These findings led to requests for mandatory reporting requirements in annual reports preceding s. 299(1)(f) (Tilt 1994; Gray, Owen & Maunders 1987).

The introduction of s. 299(1)(f) to the Corporations Law was seen by some as a positive step to improvements in annual report environmental disclosure practices; however, disclosures pursuant to the section will be presented in the same document as voluntary environmental disclosures. As already discussed, voluntary environmental disclosures are discretionary and have generally been favourable to the corporation. It may be suggested, therefore, that the usefulness of a mandatory annual report disclosure requirement may be limited in providing a balanced view of environmental performance to users where voluntary disclosures may

counter-balance negative information required by s. 299(1)(f). Consequently, it may be argued that the existence of voluntary disclosures in the current combined voluntary/mandatory system may make the mandatory disclosures required by s. 299(1)(f) impotent.

The following chapter will present the theoretical framework and proposition development for this thesis. Chapter 3 proceeds with an introduction to various theoretical perspectives utilised and discussed in the existing literature. This is followed by a detailed discussion on the theoretical perspective adopted in this study. Finally the research objectives are presented and propositions relating to the research objectives are stated.

Chapter 3

THEORETICAL FRAMEWORK

3.1 Introduction

As discussed in chapter 2, many researchers have investigated the occurrence of corporate social and environmental disclosures in annual reports. In particular, the frequency and extent of environmental disclosures has increased substantially since the late 1960's and are now relatively common (Gray, Kouhy & Lavers 1995b; Guthrie & Parker 1989; Tinker & Neimark 1987; Trotman & Bradley 1981; Trotman 1979). While an increase in the disclosure of environmental performance information may appear useful, closer examination of the content of such disclosures has revealed a propensity for positive information (Deegan & Rankin 1996), with little negative information even when the corporation has experienced negative environmental events (Deegan, Rankin & Voght 2000). Of particular concern is the potential effect on users of voluntary environmental disclosures in annual reports. Previous authors have suggested that such disclosures may lack credibility (Deegan & Gordon 1996; Deegan & Rankin 1996), be misleading (Deegan & Rankin 1996) and be of limited use to users (Hughes, Anderson & Golden 2001; Tilt 1994)[45].

[45] However, limited research has examined the impact of voluntary environmental disclosures upon users.

In an attempt to explain the existence of, and motivation for, voluntary environmental disclosures in annual reports, several theoretical perspectives have been discussed within the existing literature. A useful categorisation of theoretical perspectives for discussion purposes is provided by Gray, Kouhy and Lavers (1995b) who classify theoretical perspectives as decision-usefulness studies, economics-based theories, and political economy theories. In view of the importance of social and environmental responsibility to the community, the use of economics-based theories within the disclosure literature has been criticised (Gray, Kouhy & Lavers 1995b). It is argued that a focus on self-interest and wealth-maximisation is inappropriate and offensive (Gray, Kouhy & Lavers 1995b). In contrast, political economy theories consider the political and social aspects of environmental disclosure behaviour along with the economic aspects (Deegan 2006). Consequently, political economy perspectives including stakeholder theory and, to a greater extent, legitimacy theory have emerged as the dominant theoretical perspectives in the environmental disclosure literature (Milne & Patten 2002; O'Donovan 2002; O'Dwyer 2002; Deegan, Rankin & Tobin 2002; Wilmshurst & Frost 2000; Brown & Deegan 1998; Neu, Warsame & Pedwell 1998; Deegan & Rankin 1996; Lindblom 1994; Tilt 1994; Patten 1992; Roberts 1992). At times, however, the failure to adopt a single theoretical framework for social and environmental disclosure behaviour has resulted in criticism (Ullmann 1985; Guthrie & Parker 1990).

This chapter will proceed with a brief overview of the decision-usefulness and economics-based theoretical perspectives as discussed in the existing social and environmental disclosure literature. This will be followed by a discussion on the political economy perspective and stakeholder theory. Next, legitimacy theory will be explained, followed by a discussion of techniques used to obtain legitimacy, corporate objectives for using legitimating techniques, and the legitimation strategies adopted by corporate management.

The remainder of the chapter considers differences between corporate disclosure practices within voluntary and mandatory environmental disclosure systems. Prior to the introduction of s. 299(1)(f) environmental disclosures in Australian company annual reports were provided under a voluntary disclosure system. Due to a general absence of mandatory disclosure requirements, limited research has examined environmental disclosure practices within voluntary and mandatory disclosure systems comparatively. Studies undertaken by Wiseman (1982), Freedman and Jaggi (1982), Freedman and Wasley (1990) and Hughes, Anderson and Golden (2001) do, however, provide limited insight on this issue and are subsequently

discussed. The limitations of these studies are then outlined with reference to the context of this research. Finally, the development of the research objectives and propositions is discussed.

3.2 Theoretical Perspectives of Corporate Environmental Disclosures

As discussed in 3.1, a number of theoretical perspectives have been utilised in an attempt to explain the existence of, and motivation for, voluntary environmental disclosures of company annual reports. Gray, Kouhy and Lavers (1995b) categorise these attempts into three broad groups being decision-usefulness studies, economic theory studies and social and political theory studies. Decision-usefulness studies in the environmental disclosure literature tend to fall into two broad categories (Gray, Kouhy & Lavers 1995b) being the decision-makers emphasis and the decision-models emphasis (Deegan 2006). The decision-makers emphasis focuses upon what users want (Deegan 2006) and includes studies that ask participants to rank items in terms of their importance, such as asking investors to rank the type of information they would like included in the annual report in order of importance (Epstein & Freedman 1994). On the other hand, studies based on the decision-models emphasis attempt to determine whether social responsibility information has an information value to financial markets or participants (Blacconiere & Northcutt 1997; Blacconiere & Patten 1994; Shane & Spicer 1983; Anderson & Frankle 1980). The focus, however, of many decision-usefulness studies on financial participants and financial behaviour has resulted in criticisms as it is argued that corporate social responsibility 'is not motivated predominantly by a concern with the needs, wants and whims of financial participants' (Gray, Kouhy & Lavers 1995b, p. 51). While Gray, Kouhy and Lavers (1995b, p. 51) do criticise decision-usefulness studies as being 'mis-specified and under-theorized' they do acknowledge that the associated literature has raised the level of importance of social responsibility reporting and led, in part, to the emergence of economic theories such as Positive Accounting Theory.

Positive Accounting Theory (PAT) is a positive theory made popular by Watts and Zimmerman (1986). Positive Accounting Theory is based on positive research which is an approach of analysing 'what is' as opposed to the normative theory approach which analyses 'what should be' (Deegan 2006). Watts and Zimmerman (1986, p. 7) define Positive Accounting Theory as:

> …[being] concerned with explaining accounting practice. It is designed to explain and predict which firms will and which firms will not use a particular method.

Positive Accounting Theory is based on the wealth-maximisation and individual self-interest concepts underlying economic theory (Gray, Kouhy & Lavers 1995b). As such it is consistent with the argument that the primary responsibility of the corporation is 'to use its resources and engage in activities designed to increase its profits' (Friedman 1962, p. 133)[46]. Hence, explaining the existence of social and environmental disclosure within the PAT framework provides a somewhat limited view of the phenomenon. A typical utilisation of PAT explains movements towards socially or environmentally responsible behaviour and/or disclosure as being a result of market forces 'that directs the self-interest of the entrepreneur into socially useful channels' (Abbott & Monsen 1979, p. 511).

While it would be unrealistic to ignore the presence of this behaviour, relying upon self-interest and expectations of wealth-maximisation as the main or sole motivation for corporate environmental disclosures has been criticised as social and political factors also impact upon the corporation (Gray, Kouhy & Lavers 1995b). Corporations operate within an environment of many constituents, often with conflicting aims and objectives (Oliver 1991). As evidenced in chapter 2, the sole responsibility of corporations is no longer perceived to be economic-performance-based (Epstein & Freedman 1994; Patten 1992, 1991). The community expects companies to act in a socially and environmentally responsible manner (Lothian 1994; Tinker & Neimark 1987). Consequently, the application of many economic theories, including PAT in the discussion of corporate social and environmental behaviour and disclosure has been described as 'not only empirically implausible but also highly offensive' (Gray, Kouhy and Lavers 1995b, p. 52).

The criticisms aimed at economics-based theories, including PAT have resulted in the increased popularity of political and social theories in the social and environmental disclosure literature (Gray, Kouhy and Lavers 1995b). These theories have become increasingly

[46] While it seems that several entities do now take into consideration the needs of stakeholders other than shareholders, this is done so to the extent that it ultimately provides benefits to shareholders. Comments made in the recent Business Council of Australia submission to the Inquiry into Corporate Responsibility included 'the traditional view doesn't appear to accord with the evolution of corporations or indeed with how modern corporations are actually acting. There is increasing awareness that corporate success and maximising shareholder value are not based solely on a narrow set of considerations. Broader considerations, such as the community and environment, are essential to contribute to and protect value in the long-term and accordingly the potential shareholder wealth that can be achieved over time' (Business Council of Australia, p. 11).

established over recent years and include political economy theory (see for example Guthrie & Parker 1990), stakeholder theory (Tilt 1994; Roberts 1992; Ullmann 1985), and legitimacy theory (Cowan & Gadenne 2005; Cunningham & Gadenne 2003; Deegan, Rankin & Tobin 2002; Patten 2002b; Wilmshurst & Frost 2000; O'Donovan 1999; Deegan & Gordon 1996; Deegan & Rankin 1996; Patten 1992; Guthrie & Parker 1989; Tinker & Neimark 1987; Hogner 1982).

3.3 Political Economy Theory

The usefulness of political economy theories is that they do not focus solely on the economic self-interest and wealth-maximisation of the individual or corporation. Instead political economy theory (PET) considers 'the political, social and institutional framework within which the economic takes place' (Gray, Kouhy & Lavers 1995b, p. 52). As discussed in chapter 2 several empirical studies have identified an increase in social and environmental annual report disclosures that correspond with periods where those issues peaked in importance politically and/or socially (Deegan, Rankin & Tobin 2002; Guthrie & Parker 1989; Hogner 1982). As such, political economy theories seem to better explain why 'corporations appear to respond to government or public pressure for information about their social impact' (Guthrie and Parker 1990, p. 172).

The usefulness of PET lies not only in its assessment of corporate disclosures as a reaction to the existing demands of stakeholders but in the way it 'perceives accounting reports as social, political and economic documents' (Guthrie & Parker 1990, p. 166). Therefore, PET also recognises the use of social and environmental disclosures in annual reports as a strategic tool in achieving organisational goals, and in manipulating the attitudes of external stakeholders (Guthrie & Parker 1990).

Gray, Owen and Adams (1996) usefully classify PET into 'classical' and 'bourgeois' streams. Classical PET is linked to the works of Karl Marx and the existence of class interest, power and conflict within society. Deegan (2006, p. 274) describes classical PET as:

> …[tending] to perceive accounting reports and disclosures as a means of maintaining the favoured position of those who control scarce resources (capital), and as a means of

> undermining the position of those without scarce capital. It focuses on the structural conflicts within society.

Tinker and Neimark (1987) use the classical political economy approach in an examination of the use of annual reports within a capitalist society. They argue (1987, p. 72):

> …corporate reports are not passive describers of an "objective reality", but play a part in forming the world-view or social ideology that fashions and legitimises …the company's annual reports were deployed as ideological weapons aimed at influencing the distribution of income and wealth, in order to ensure the company's continued profitability and growth.

In contrast, the 'bourgeois' political economy approach generally ignores 'sectional (class) interests, structural inequity, conflict and the role of the State' and 'is content to perceive the world as essentially pluralistic' (Gray, Kouhy & Lavers 1995b, p. 53). The pluralistic view adopted by the 'bourgeois' PET ignores the existence of particularly powerful groups in society but tends to focus on the group interactions within 'society' as a whole (Gray, Owen & Adams 1996). The application of stakeholder and legitimacy theory in the accounting and social and environmental disclosure literature has been described as generally being within a 'bourgeois' political economy perspective (Deegan 2006; Gray, Kouhy & Lavers 1995b).

Bourgeois political economy theories, particularly legitimacy theory, have been discussed frequently in the social and environmental disclosure literature. The following discussion on stakeholder theory has been included to provide a useful insight of the relationship between a corporation and its stakeholders. Stakeholder theory, and in particular Ullmann's (1985) discussion in this area, provides a grounding for the discussion on legitimacy theory which follows. Legitimacy theory is adopted as the theoretical perspective of this thesis.

3.4 Stakeholder Theory

The definition of 'stakeholder' has altered substantially over the past four decades. At one end of the spectrum the shareholder was considered the sole or principal stakeholder. This definition was based on arguments proposed by Friedman (1962) that the corporation's foremost objective is to maximise the wealth of its owners. Freeman and Reed (1983), however, expand the definition of stakeholder to include a broader selection of constituents

including adversarial groups such as interest groups and regulators. Both the narrow (shareholder) and the expanded (shareholder plus other groups) definition of stakeholders have been adopted in the development of mandatory environmental disclosure regulations for corporations. The Australian Democrats focussed on the interests of shareholders in amending the Corporations Law to include s. 299(1)(f). In proposing the amendment Senator Murray stated:

> …many companies are materially affected financially in terms of environmental situations. I think we only have to recall some of BHP's financial consequences for environmental matters to be well aware of that…all those points I have laid out there will improve the nature of reporting which materially affects the value of shareholders' interest in companies…
> (Senate Hansard, 24th June 1998, p. 4013)

In contrast, the Danish Parliament, *the Folketing*, adopted the broader definition of stakeholders for its Green Accounts Act. The Danish Environmental Protection Agency, which is responsible for supervision of the Green Accounts Act, includes as stakeholders customers, suppliers, local communities (and neighbours), professionals and the public, employees, the press, authorities, interest groups and investors (Danish Environmental Protection Agency 2000, pp. 3–5). Interestingly, it would appear that disparities of views regarding who is a stakeholder within other sectors such as government are also reflected in disparities in the research literature.

Many early empirical studies examining the relationships between social performance, social disclosure and economic performance obtained inconsistent results. Ullmann (1985) analysed several early empirical studies that examined these relationships in an attempt to develop a previously obscure theoretical framework. Ullmann (1985) argued that the failure of previous research to identify a theoretical framework was based on several factors. These included:

- Problems in the methods used to conceptualise and operationalise key terms;
- A lack of consistency between researchers, thus resulting in a lack of comparability between studies;
- A failure to recognise the strategic posture adopted by management in the analysis.

While the first two issues relate to the methodological approach used by the researchers, the discussion on strategic posture added a new dimension to the literature at that time. Stakeholder theory comprises an ethical (moral) branch and a managerial branch (Deegan 2006). At the basis of Ullmann's managerial branch of the framework is the concept of "stakeholder power". In contrast, Freeman (1984, p. 46), incorporating the ethical branch, defines a stakeholder as 'any group or individual who can affect or is affected by the achievement of the firm's objectives'. This definition is expanded by Clarkson (1995, p. 106) in which stakeholders are:

> …persons or groups that have, or claim, ownership, rights, or interests in a corporation and its activities, past, present, or future. Such claimed rights or interests are the result of transactions with, or actions taken by, the corporation, and may be legal or moral, individual or collective. Stakeholders with similar interests, claims, or rights can be classified as belonging to the same group: employees, shareholders, customers, and so on.

The ethical branch of stakeholder theory addresses why an organisation should consider the interests of stakeholders even where those stakeholders may not provide benefits to the organisation (Gibson 2000). Within this branch, Donaldson and Preston (1995, p. 67) explain that:

> Stakeholders are persons or groups with legitimate interests in procedural and/or substantive aspects of corporate activity. Stakeholders are identified by their interests in the corporation, whether the corporation has any corresponding functional interest in them.

As a consequence of this view, it is argued that all stakeholders should be considered as important to the organisation and that 'each group of stakeholders merits consideration for its own sake and not merely because of its ability to further the interests of some other group, such as shareholders' (Donaldson & Preston 2000, p. 67)[47]. Therefore the ethical branch suggests that an organisation has an obligation to treat all stakeholders equally (Gibson 2000).

In contrast to the ethical branch, the managerial branch acknowledges that stakeholders control or have the ability to affect (directly or indirectly) control of resources required by the

[47] An example of considering the interests of other stakeholders in order to increase shareholder wealth is provided in section 3.2 earlier in this chapter.

corporation. Thus, stakeholder power is determined by the level of control they have over the resources. The stakeholder-corporation power relationship is not generic across corporations (Deegan 2006). Power may take the form of 'command of limited resources (finance, labour), access to influential media, ability to legislate against the company, or ability to influence the consumption of the organisation's goods and services' (Deegan 2006, p. 299). Thus, 'when stakeholders control resources critical to the organisation, the company is likely to respond in a way that satisfies the demands of the stakeholders' (Ullmann 1985, p. 552). Ullmann (1985) argues that organisations select the stakeholders that they want/need to consider, and the actions that they will take to achieve the desired relationship with those stakeholders[48].

Therefore, the managerial branch of stakeholder theory is generally concerned with the way that an 'organisation *manages* its stakeholders' (Gray et al 1997, p. 333). As a result, Ullmann (1985) argues that the power of stakeholders is related to the strategic posture adopted by the corporation. According to Ullmann (1985, p. 552), an organisation's strategic posture 'describes the mode of response of an organization's key decision makers towards social demands'. Therefore, the managerial branch of stakeholder theory sees the world from the perspective of management (Gray, Kouhy & Lavers 1995b) and asserts that:

> …the corporation's continued existence requires the support of the stakeholders and their approval must be sought and the activities of the corporation adjusted to gain that approval. The more powerful the stakeholders, the more the company must adapt. Social disclosure is thus seen as part of the dialogue between the company and its stakeholders…
> (Gray, Kouhy & Lavers 1995b, p. 53)

The way a corporation *manages* its stakeholders is dependent upon the strategic posture adopted by the corporation (Ullmann 1985). Ullmann (1985) argues that organisations may adopt an 'active' or 'passive' strategic posture. Corporations that adopt an 'active' posture 'seek to *influence* [emphasis added] their organization's relationship with *important* [emphasis added] stakeholders' (Ullmann 1985, p. 552). This reference to the 'important' stakeholders reinforces the fact that companies with an active posture not only identify stakeholders but must also determine those stakeholders with the greatest ability to influence

[48] As the managerial perspective provides a narrower determination of who is a stakeholder, it would also result in a narrower level of perceived responsibilities and accountabilities. This would subsequently result in a narrower extent of voluntary reporting.

the provision of resources to the corporation (Ullmann 1985). In contrast, the corporation with a 'passive' posture is 'neither involved in continuous monitoring activities [of stakeholders] nor deliberately searching for an optimal stakeholder strategy' (Ullmann 1985, pp. 552-553). The lack of stakeholder engagement inherent in a 'passive' strategic posture is expected to result in 'low levels of social disclosure' and 'low levels of social performance' (Ullmann 1985, p. 554).

Essentially, the basis of Ullmann's theoretical framework is that a corporation manages dependence relationships, that is, those with its stakeholders, through the use of social performance or disclosure. Ullmann suggests that where stakeholder power is high, and when economic performance is good, a corporation with an active strategic posture will have high levels of both *voluntary* and (where regulatory requirements exist) *mandatory* social disclosures. Ullmann argues that if economic performance is poor, the corporation will have low levels of *voluntary* social disclosure due to the priority of economic matters over social matters while maintaining high levels of *mandatory* disclosures. In this way a corporation may be seen by stakeholders as bound by government regulations and, as such, spending on social matters is not a voluntary or frivolous activity of management in times where economic prosperity is absent (Ullmann 1985).

Despite an extension beyond the economic and an acknowledgement of power relationships between the corporation and its stakeholders, Gray et al. (1997) argue that stakeholder theory is flawed. As discussed above, the managerial branch of stakeholder theory focuses on the way the corporation *manages* its stakeholders. The corporation identifies the stakeholders that it will consider, and the level of attention it will give to each is based on how those stakeholders can *benefit* the organisation. They suggest that stakeholder theory is essentially a 'market forces' approach in which resources and the provision/withdrawal of those resources determines the type of voluntary social disclosures at a given point in time (Gray et al. 1997). They argue that the 'organization-centred legitimacy' of which stakeholder theory is reliant ignores important influences of society as a whole on the organisation's provision of information. These include the existence of statute law and regulations developed by government and statutory bodies which contain requirements for information disclosure.

An understanding of the role of stakeholders as an influence on corporate environmental disclosure practices is important. As discussed in chapter 2, a diverse range of stakeholders, other than shareholders, were discussed and/or involved in the development of the NPI and in

submissions to the PJSC enquiry into s. 299(1)(f) of the Corporations Law. During the introduction of the NPI Senator Hill identified a far broader group of stakeholders than shareholders when he referred to the NPI as satisfying a "community right-to-know". Furthermore, although the Democrats directly mentioned only the needs of shareholders and those with financial interests in the entity as those who would benefit from the introduction of s. 299(1)(f), the subsequent enquiry received submissions from a range of business, industry, environmental, social and community groups[49].

Another political economy theory, institutional theory, is beginning to emerge in the social and environmental disclosure literature (Cormier, Magnan & Van Velthoven 2005). In contrast to the managerial branch of stakeholder theory in which organisations have some control over external influences, institutional theory suggests that the organisation is defined by external institutions and culture (Suchman 1995). Institutional theory 'concerns the development of the taken for granted assumptions and beliefs and values underlying organizational characteristics and practices' (Dillard, Rigsby & Goodman 2004, p. 507). Institutional theory considers how an organisation interacts with its institutional environment, how societal expectations impact the organisation, and how these expectations are reflected in its practices. Therefore, environmental disclosures may be practices that have become institutionalised over time and symbolise both stakeholder concern and the environmentally conscious organisation (Scott 1995). Dillard, Rigsby and Goodman (2004) explain that such practices are motivated by a need to be considered legitimate by society; legitimacy itself being determined by societal norms and values. While stakeholder theory and institutional theory have been used as the theoretical perspective in several empirical studies (Deegan & Blomquist 2006; Cormier, Magnan & Van Velthoven 2005; Scott 1995; Tilt 1994; Roberts 1992), the dominant explanatory theory in the social and environmental disclosure literature has been legitimacy theory.

[49] The ASX Corporate Governance Council has also extended the definition of who is a stakeholder of an entity. The Council also provides best practice guidelines to 'companies and other listed entities' (ASX Corporate Governance Council 2003, p. 7). Ten corporate governance principles are required to be reported upon in accordance with Listing Rule 4.10. In particular Principle 10 requires reporting entities to recognise the interests of stakeholders including shareholders, the financial community, customers, suppliers, employees, individuals and the community (ASX Corporate Governance Council 2003). Recommendation 10.1 states that 'consultation with the governments and communities in whose territory business is conducted is important. Public or social accountability by corporations is generally based on notions of legitimacy, fairness and ethics' (ASX Corporate Governance Council 2003, p. 59).

3.5 Legitimacy Theory

Many authors have discussed corporate environmental and social disclosure practices within the theoretical framework of legitimacy theory (see for example Cowan & Gadenne 2005; Cunningham & Gadenne 2003; Deegan 2002; Deegan, Rankin & Tobin 2002; Milne & Patten 2002; O'Donovan 2002; O'Dwyer 2002; Patten 2002a; Wilmshurst & Frost 2000; O'Donovan 1999; Deegan & Gordon 1996; Deegan & Rankin 1996; Tilt 1994; Patten 1992; Patten 1991; Guthrie & Parker 1989; Tinker & Neimark 1987; Hogner 1982). Dowling and Pfeffer (1975, p. 131) suggest that legitimacy theory is useful in analysing corporate behaviour:

> …because legitimacy is important to organizations, constraints imposed by social norms and values and reactions to such constraints provide a focus for analysing organizational behaviors taken with respect to the environment.

Gray, Kouhy and Lavers (1995b) argue that legitimacy theory and stakeholder theory should be seen as overlapping, as opposed to competing, theories. They explain that both perspectives are set within the framework of political economy theory. As the influence of society as a whole can affect the provision of financial and other resources to the firm, the firm utilises environmental performance and disclosure to justify or legitimise its activities to society. Unlike the managerial branch of stakeholder theory which suggests that the corporation and its management acts and reports in accordance to the needs and power of its *separate* stakeholder groups (Ullmann 1985), legitimacy theory focuses on the firm's interactions with society. Dowling and Pfeffer (1975, p. 122) provide a useful explanation of organisational legitimacy:

> Organizations seek to establish congruence between the social values associated with or implied by their activities and the norms of acceptable behavior in the larger social system of which they are a part. Insofar as these two value systems are congruent we can speak of organizational legitimacy. When an actual or potential disparity exists between the two value systems, there will exist a threat to organizational legitimacy.

Underlying legitimacy theory is the 'social contract' that exists between the firm and the society within which that firm operates and consumes resources. Shocker and Sethi (1974, p. 67) provide a regularly quoted explanation of the concept of 'social contract':

(71)

> Any social institution – and business is no exception – operates in society via a social contract, expressed or implied, whereby its survival and growth are based on:
>
> 1) The delivery of some social desirable ends to society in general, and
> 2) The distribution of economic, social, or political benefits of groups from which it derives its power.
>
> In a dynamic society, neither the sources of institutional power nor the needs for its services are permanent. Therefore, an institution must constantly meet the twin tests of legitimacy and relevance by demonstrating that society requires its services and that the groups benefiting from its rewards have society's approval.

Dowling and Pfeffer (1975, p. 124) argue that legitimacy cannot be 'defined solely by what is legal or illegal'. Society's expectations of corporate behaviour are both 'implicit' and 'explicit' (Deegan 2006, p. 278). Deegan (2006, p. 278) describes the explicit terms of the social contract as legal requirements, whereas the implicit terms are 'non-legislated societal expectations'. The reason for the imperfect correlation between the law and societal norms and values is threefold (Dowling & Pfeffer 1975). Even though the law is often reflective of societal norms and values, the legal system may be slow in adapting to changes in norms and values in society. Furthermore, the legal system is based on consistency whereas norms may be contradictory. And finally, it is suggested that society may tolerate certain behaviours but not be willing to codify those behaviours in the legal system (Dowling & Pfeffer 1975).

Organisational legitimacy is something that is both conferred upon the corporation by society and something that is desired or sought by the corporation from society. As such, it has been argued that legitimacy may be seen as a potential benefit or resource to the organisation (O'Donovan 2002; Dowling & Pfeffer 1975).

Parties external to the entity confer legitimacy (Ashforth & Gibbs 1990; Dowling & Pfeffer 1975). Where a difference exists between the values of the corporation, and the values of the community, corporate legitimacy is threatened (Lindblom 1994; Dowling & Pfeffer 1975). This disparity between the entity's values and those of society is referred to as the "legitimacy gap" and may affect the corporation's ability to continue its operations (Dowling & Pfeffer 1975). Legitimacy gaps may occur when:

- There is a change in corporate performance but society's expectations of corporate performance remains unchanged;
- Corporate performance is unchanged, but society's expectations of corporate performance have changed;
- Corporate performance *and* society's expectations change in different directions, or in the same direction but with differing momentum.

  (Wartick & Mahon 1994)

It may be argued that the existence of and size of the legitimacy gap may not always be easy to determine. As discussed in the previous chapter, a primary objective of the NPI was to provide the community with information on the pollution performance of entities. It was expected that community awareness would result in community pressure upon the corporation to improve its environmental performance. Howes (2001, p. 530) argues that:

> Inventories like the TRI and NPI aim to fulfil several functions. First, they inform the public – particularly plant workers and communities near these facilities – about their exposure to toxic chemicals. Second, they get business to conduct audits, find out what they are releasing, and bring this to the attention of senior executives. Third, they generate the incentive for change through a combination of public pressure and a new corporate awareness. Firms may legally use and release these chemicals and there is no legal or financial incentive (in terms of fines) not to emit as long as other relevant regulations are obeyed. The only sanction available under such programs is the adverse reaction of the public.

Furthermore, Fayers (1998) argues that corporations that demonstrate compliance with the NPI, and subsequently improve environmental performance through a reduction in emissions, may improve legitimacy and be considered favourably by ethical investment funds. A report by the NEPC (2002) has expressed concern at the lack of knowledge of the NPI's existence, purpose and content among the general community. This suggests that from a corporation's perspective, it may be difficult to determine whether society is aware of the availability of information provided by the NPI concerning the corporation's pollution emissions. Therefore, determining the existence of, or potential size of a legitimacy gap resulting from the NPI may be problematic for the corporation.

O'Donovan (2002) suggests that where a disparity exists between the expectations of the corporation and those of its relevant publics the corporation will need to evaluate its social values and then align them with those held by the society in which it operates. Alternatively, the corporation may attempt to alter the existing social values or perceptions of the corporation as a legitimation tactic. In order to close the legitimacy gap, the entity must identify those activities that are within its control, and identify the relevant publics that have the power to provide the entity with legitimacy (Neu, Warsame & Pedwell 1998).

3.5.1 Legitimacy techniques

A corporation may use a variety of legitimating techniques to execute its chosen strategy. Ashforth and Gibbs (1990) provide two general, but large, categories of legitimating techniques that a corporation may adopt – substantive and symbolic management techniques. The use of *substantive* management techniques 'involves real, material change in organizational goals, structures, and processes or socially institutionalised practices' (Ashforth & Gibbs 1990, p. 178). There are several different substantive management techniques that corporations may utilise. For example, corporations may simply perform in accordance with societal expectations. Alternatively, the corporation may change its relevant publics, or the level of degree to which it is dependent on those publics' resources. At the other end of the spectrum the corporation may adopt techniques to actively align the values of society to those of the corporation (Ashforth & Gibbs 1990). Regardless of the approach adopted, substantive management techniques involve a *real* change in the behaviour of the corporation.

In contrast, *symbolic* management techniques of legitimation involve the *portrayal* of corporate behaviour in a manner to '*appear* consistent with social values and expectations' (Ashforth & Gibbs 1990, p. 180). Companies may publish policies on various issues including the environment, but may not enforce or set in place mechanisms for the full adoption of such policies. Other techniques may include offering excuses for behaviour or apologies (Ashforth & Gibbs 1990). Finally, corporations might adopt techniques that involve little or no action whatsoever.

It is not necessary to use either substantive or symbolic management techniques exclusively. Corporations may adopt a mix of substantive and/or symbolic legitimating techniques and may apply these with varying levels of intensity (Ashforth & Gibbs 1990); however, the

intention of all legitimating techniques is basically to 'foster the belief among constituents that the organization's activities and ends are congruent with the expectations, values, and norms of constituents' (Ashforth & Gibbs 1990, p. 182). In addition, the legitimating techniques chosen will depend on the legitimacy objectives or purpose being sought by the corporation (O'Donovan 2002; Oliver 1991; Ashforth & Gibbs 1990). For instance, is the corporation attempting to extend or gain legitimacy, maintain, or repair or defend legitimacy (O'Donovan 2002; Ashforth & Gibbs 1990)?

3.5.2 Objectives for using legitimacy techniques

A corporation facing a potential or actual legitimacy threat may seek to extend or gain legitimacy when the corporation is becoming established or moving into a new field or process (O'Donovan 2002). Ashforth and Gibbs (1990, p. 182) describe the need to extend legitimacy as a 'liability of newness'. Tactics adopted for extending legitimacy tend to be proactive and intense. Consequently, management will prefer to adopt symbolic techniques as these preserve resources and maintain flexibility (Ashforth & Gibbs 1990). Where symbolic legitimising tactics are not effective in extending legitimacy, the relevant publics of these corporations will prefer substantive techniques resulting in conflict between corporate management and the corporation's relevant publics. Under these circumstances, the greater the power of the relevant publics, or the more significant the resource to the corporation, the greater the probability of substantive measures being given by management (Oliver 1991).

Where a corporation has already gained approval or legitimation from its relevant publics, it will need to adopt techniques that maintain legitimacy (O'Donovan 2002; Ashforth & Gibbs 1990). According to Ashforth and Gibbs (1990, p. 183), the process of maintaining legitimacy involves:

1) ongoing role performance and symbolic assurances that all is well; and
2) attempts to anticipate and prevent or forestall potential challenges to legitimacy.

While gaining legitimacy may be difficult, once legitimacy has been conferred it is often taken for granted (Ashforth & Gibbs 1990). In order to maintain legitimacy the corporation must be diligent and keep abreast of the changing values of its relevant publics (O'Donovan 2002). Furthermore, the corporation must be aware of the differences in values held by its

various relevant publics. O'Donovan (2002) argues that the techniques and intensity used to maintain legitimacy may be dependent on the level of legitimacy the corporation already has. Therefore, 'the less 'legitimacy' an existing organization has to begin with, the less it needs to maintain' (O'Donovan 2002, p. 350).

Corporations may adopt legitimating techniques to repair or defend legitimacy (O'Donovan 2002; Ashforth & Gibbs 1990). Corporations defend legitimacy where the existing legitimacy is under threat. Unlike attempts to gain or extend legitimacy, corporations defending legitimacy often do so as a reactive process following a crisis or adverse publicity (O'Donovan 2002). For example Patten (1992) found that US petroleum firms increased environmental disclosures in annual reports following the oil spill disaster by the Exxon Valdez tanker. Similarly, firms that were prosecuted by State EPA's in Australia increased subsequent annual report disclosures (Deegan & Rankin 1996). It is also possible that an organisation may lose legitimacy even in circumstances where its operations have not altered (O'Donovan 2002). O'Donovan (2002, p. 348) suggests that this can occur due to:

a. changes in the composition of the entity's relevant publics; and/or
b. changes in the values of the entity's relevant publics due to:
    a. changes in social awareness;
    b. pressures from regulatory or institutional sources;
    c. the influence of media;
    d. pressure from lobby groups;
    e. crises.

Finally, it is possible that legitimacy may be lost where new information on the corporation is made available to its relevant publics (Milne & Patten 2001). Under such circumstances the entity may have been operating under the same conditions for an extensive period, but its relevant publics were not aware or did not seek out the information. This information may have been difficult to obtain in the past and may now be available publicly to the community through environmental disclosure system information such as the pollution emission data provided on the NPI or through mandatory annual report disclosures such as those required under s. 299(1)(f) of the Corporations Act. Therefore, where such information is made

available to its relevant publics the corporation will need to adopt strategies to close any potential or actual legitimacy gaps.

3.5.3 Corporate strategies of legitimacy

Lindblom (1994) identified four legitimation strategies that corporations may adopt. First, corporations that have engaged in substantive changes to environmental performance or activities may attempt to inform relevant publics of these changes. Second, the corporation may attempt to alter the perceptions of its relevant publics, where no actual change in performance or activity has occurred. Third, the corporation may attempt to divert attention from the problematic issue by discussing other, more favourable, issues. Lastly, the corporation may try to alter societal values and norms to make them accord with those of the corporation. Gray, Kouhy and Lavers (1995a, p. 65) provide a useful application of Lindblom's strategies in a longitudinal study of UK firms' social and environmental disclosures:

> A significant minority of companies found it necessary to 'change their actual performance' with respect to environmental interactions (Lindblom's first strategy) and use corporate social reporting to inform their 'relevant publics' about this. Similarly, companies environmental disclosure has also been an attempt, first, to change perceptions of environmental performance – to alter perceptions of whether certain industries were 'dirty' and 'irresponsible' (Lindblom's second strategy) and, second, as Lindblom notes, to distract attention from the central environmental issues (the third legitimation strategy).

A determination of which of Lindblom's (1994) strategies a corporation has adopted requires knowledge of the actual environmental performance of the corporation. It may be difficult for users to determine whether environmental disclosures in the annual report relate to real or substantive actions to improve environmental performance. Earlier research identified that voluntary environmental disclosures in annual reports were generally positive in nature (Deegan, Rankin & Tobin 2002; Deegan, Rankin & Voght 2000; Deegan & Rankin 1996). Where this is the case the user will need to be aware of actual environmental performance to determine whether the corporation is portraying symbolic actions of environmental performance, attempting to alter perceptions, or distracting attention from other environmental issues.

Oliver (1991) provides a similar categorisation of legitimation strategies. Oliver (1991, p. 152) proposes five strategies that corporations may adopt when facing legitimacy threats: acquiesce, compromise, defy, manipulate, and/or avoid. Corporations that acquiesce generally adopt a compliance posture. The corporation conforms to societal values and norms. A compromising strategy involves balancing the needs, norms and values of various stakeholder groups. This strategy is important where the corporation has several groups of stakeholders with conflicting values and norms. When a corporation adopts a defiance approach there is an active attempt to *not* comply with the values, norms and regulations with which it does not support or agree. The extent of defiance depends on the risk of punishment for non-compliance. Where the threat of punishment is minimal corporations may simply dismiss the requirements. Where there is more at stake corporations may challenge, or even attack values or norms and those publics that convey them. Manipulation strategies attempt to align the values of the constituents with the corporation. Manipulation is an extremely active posture in that the corporation seeks to influence and even exert control over the environment in which it operates. Some corporations and industry groups have adopted manipulation strategies when attempting to prevent the introduction of mandatory reporting requirements in Australia. As discussed in chapter 2, the introductory phases of the NPI and s. 299(1)(f) were subject to such strategies.

Finally, corporations may adopt an avoidance strategy. Ashforth and Gibbs (1990) describe this as a denial and/or concealment technique for legitimation. Corporations using this legitimation technique 'simply suppress information regarding activities or outcomes likely to undermine legitimacy' (Ashforth & Gibbs 1990, p. 180). An avoidance technique may also manifest itself as merely ignoring the issue of concern (O'Donovan 2002). Therefore, a denial or avoidance technique may include providing no information on the NPI or providing limited or minimal information on the NPI, or emissions in annual reports.

As discussed in this section, corporations adopt various techniques for extending, maintaining or defending legitimacy. The techniques may be substantive or symbolic depending on the purpose sought and strategic posture adopted by management. Regardless of the substantive or symbolic nature of the techniques, the underlying objective of all legitimising activities is to gain, maintain or repair legitimacy from the corporation's relevant publics.

In order to achieve the objective sought, the legitimising activities of the corporation must be communicated or presented to society (Dowling & Pfeffer 1975). Previous research has shown that the annual report is a regular means for reporting on legitimising activities – substantive or symbolic – and as an instrument to alter societal perceptions of the corporation or to alter the values and norms of society (Deegan, Rankin & Voght 2000; Brown & Deegan 1998; Li, Richardson & Thornton 1997; Deegan & Rankin 1996; Blacconiere & Patten 1994; Patten 1992). This is reflective of the perceived usefulness of the annual report for communicating details of the corporation's environmental performance activities to users (O'Donovan 1999)[50].

3.6 Statement of the Research Objectives Relating to the NPI

The National Pollutant Inventory provides the Australian community with information on the pollution emissions of entities that exceed the thresholds outlined by the inventory. The NPI is an annual public disclosure of corporate pollution emissions on the Internet.

The NPI not only represents a changing operating environment but, where the community is accessing the information, a potential legitimacy gap for corporations with emissions published on the NPI. As outlined at its inception, the goals and objectives of the NPI include the provision of information to the community on the pollution emissions of entities operating within their region. It has been proposed that an increase in emission information to the community will act as an impetus for industry to improve environmental performance. Howes (2001, p. 529) argues that the NPI compels 'business to release information that they find embarrassing'. Consequently, it may be suggested that the government is expecting the NPI to initially generate a legitimacy gap between the community and corporations operating within those communities. That is, there may be a disparity between the emission types and levels of the corporation and the expectations of the society or community in which it operates.

[50] The use of legitimation strategies by corporations appears to persist despite the development of the Global Reporting Initiative (GRI) and the ISO 14000 reporting standards for environmental management. In a study of Australian companies, Raar (2002) concluded that there was an increase in environmental reporting in annual reports following the introduction of these guidelines; however, only a small increase in the production of separate environmental reports occurred. It has also been identified that Swedish companies utilise the reporting guidelines as a means of gaining credibility and legitimising their activities (Hedberg & Von Malmborg 2003).

The literature review in chapter 2 shows that corporations may experience negative security market returns following environmental disasters (Blacconiere & Northcutt 1997; Blacconiere & Patten 1994), or the release of information relating to pollution performance information (Shane & Spicer 1983). Therefore, according to governmental expectations of the NPI, corporations will attempt to close the legitimacy gap by improving environmental performance. Thus, from a governmental perspective, the corporation's norms and values relating to environmental performance will be more closely aligned with the norms and values, and expectations of environmental performance of the community.

The existing literature has provided useful evidence that suggests corporations use environmental disclosures strategically under certain conditions (Deegan, Rankin & Tobin 2002; Deegan, Rankin & Voght 2000; O'Donovan 1999; Deegan & Rankin 1996). Firstly, a negative relationship between environmental performance and environmental disclosure in annual reports has been identified. Corporations with questionable environmental performance have been identified as having higher levels of environmental disclosures in annual reports (Al-Tuwaijri, Christensen & Hughes II 2004; Li, Richardson & Thornton 1997; Rockness 1985). Secondly, corporations that have been subjected to external publication of environmental information that could be perceived as negative have been found to disclose greater quantities of environmental disclosures of a positive nature in annual reports (Deegan & Rankin 1996). Thirdly, corporations that have experienced a serious environmental event such as a spill or leak, and/or obtained negative media publicity regarding such events, have increased the quantity of disclosures in annual reports following the event (Deegan, Rankin & Tobin 2002; Brown & Deegan 1998; Deegan & Rankin 1996; Patten 1992).

The strategic use of the quantity and nature of environmental disclosures in annual reports has been shown as potentially beneficial to the corporation (Blacconiere & Northcutt 1997; Blacconiere & Patten 1994; Shane & Spicer 1983; Anderson & Frankle 1980). Increased environmental disclosures may reduce negative economic impacts on the corporation, particularly following the release of unfavourable environmental performance information. Often, the strategic use of environmental disclosures in annual reports has been explained within the theoretical perspective of legitimacy theory. When the norms and values of the corporation are perceived to be different to those of the society in which the corporation operates a legitimacy gap may occur. Previous research has shown that changes in environmental disclosures in annual reports often occur where it is known or believed that

environmental performance information that may be perceived as negative has been communicated to the corporation's relevant publics.

Therefore, the size of the legitimacy gap and the legitimation strategy adopted by the corporation to close that gap is dependent upon the level to which the corporation's relevant publics are aware of the environmental information. As discussed in chapter 2, an initial review of the NPI expressed concern at the level of knowledge of the NPI by the general community. The 2005 review suggested that the NPI was used by several groups including community organisations, government, financial institutions, research organisations and individuals. Both reviews suggested a need for additional expenditure to inform the community of both the existence and purpose of the NPI.

An ad hoc review undertaken by the author of the number of media articles in national, state and regional newspapers and radio, and electronic news media identified that the information on the NPI has been discussed within the media[51]. Table 4 identifies the number of items referring to the NPI during the years 1997 to 2005. In 1998, when the NPI was established, there were fifteen references to the NPI in the news media. During 2000, its first year of publication, there were eighteen articles.

Table 4: Number of media articles referring to the NPI for the years 1997 to 2005

	1997	***1998***	***1999***	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***
Number of articles on Factiva	**4**	**15**	**10**	**18**	**18**	**19**	**19**	**6**	**10**

In general, articles preceding publication of the first NPI database in January 2000 referred to the development, and impending availability, of pollution emission information. Preceding the agreement for the introduction of the NPI, Williams (1998, p. 7) reported in the *Courier Mail* that:

[51] The review was conducted using the search term "National Pollutant Inventory" on Factiva ®.

(81)

> Brian Littleproud, Queensland (Australia) Environment Minister, has announced that the state will join an Australia-wide National Pollutant Inventory to curb dangerous emissions by industry. However, the move is being criticised by spokesman, James Whelan, of lobby group, the Queensland Conservation Council, for listing only 36 substances, when the council has actually already identified 95 harmful pollutants.

Some newspaper articles, however, focussed upon the impact of the NPI on corporate operations. A report in the *Financial Review* (Griffin 1997, p. 19) stated:

> You'd expect this sort of proposal to make some parts of industry very nervous – and to some extent it has. Even some multinational firms that are comfortable about reporting data to their local community have a few reservations about reporting nationally, regarding it as a much riskier proposition than soothing a few hot-under-the-collar locals.
>
> …So what will happen when industry unburdens? The NPI is likely to have some discomforting measles for all of us.

Criticisms of the proposed Inventory were included in several articles following the agreement by State Environment Ministers to implement the NPI. Strong (1998, p. 8) reported in *The Age*:

> Five chemicals subject to strict environmental controls in the United States, including an acid powerful enough to melt glass, have been left off Australia's National Pollutant Inventory.
>
> All five of these chemicals are believed to have been released into the environment by Melbourne factories recently.

The *Herald-Sun* reported 'Australian companies will not be forced to report what toxic pollutants they dump in sewers and landfills under the National Pollutant Inventory' (Dent 1998, p. 11). The 'gutting of the National Pollutant Inventory' was used by the *Canberra Times* (in a 1110 word article) as an example of an ineffectual Federal/State Government approach to environmental matters (27 May 1998, p. 9) arguing that:

> Many of the environmental issues of greatest concern to the Australian community are not included as "matters of national significance". Air pollution, water pollution and deforestation are top of the list surveyed by the Australian Bureau of Statistics in 1996, yet fail to appear in the priority list for national action.

In discussing the NPI in 1998, the *Financial Review* (Jay 1998, p. 54) explained the motivation for its implementation:

> The NPI comes on top of community pressure against opening of new landfills and for closure of existing ones, the inability to find a politically acceptable site for a national high-temperature incinerator to dispose of certain difficult toxic chemicals, proposals for reductions in emissions of greenhouse gases and progressive tightening of controls on noxious and hazardous chemicals and waste products.

It was also suggested in the *Financial Review* that the information provided on the NPI database may impact upon the provision of supply contracts to certain entities. As explained by Jay (1999, p. 54):

> A National Pollutant Inventory now being put together by Commonwealth and State environmental agencies is steadily becoming a factor to be reckoned with by private business interested in sales to government departments and agencies. Under Commonwealth purchasing guidelines, purchasing officers are required to take into account a range of policy interests, including environmental issues. As well, several States have introduced purchasing policies and guidelines which specify that private suppliers' environmental images and records must be taken into account.

In the period immediately surrounding the first NPI Internet publication date in January 2000, articles appeared in the *Illawarra Mercury*, the *West Australian* (two articles), the *Daily Telegraph*, the *Sydney Morning Herald*, the *Canberra Times* (two articles), the *Hobart Mercury*, and the *Australian* (two articles) providing information relating to the purpose and location of the new NPI database. For example, the *Daily Telegraph* (29 Jan. 2000, p. 14) reported that:

> Australians will have a clearer picture of pollutants being discharged in their neighbourhoods with the launch of a national pollutant database, the Federal Government said.

> …The inventory is accessible on the Internet to show the types and amounts of chemicals discharged into the air, land and water.

Immediately following publication of the first database, information included in the database was reported on by the media. On the 29th January the *Sydney Morning Herald* (Woodford 2000, p. 3) reported:

> A single Sydney factory complex is pumping more than 2.75 million kilograms of waste, including mercury and arsenic, into the atmosphere every year, figures released for the first time reveal.
>
> At the Matraville factory complex operated by Orica Australia Pty Ltd, more than 230 kilograms of mercury is being released into the skies annually a figure that neither the company nor the Environment Protection Authority was aware of until last year.
>
> The new figures were released as part of the Federal Government's establishment of the National Pollutant Inventory database, which requires all Australian companies producing more than a certain quantity of dangerous chemicals to reveal their pollution levels.

Media reports since the first publication of the NPI have used the information on the NPI to discuss the environmental performance of both individual companies and industries. Southwell (2002) referred to the NPI in the *West Australian* on the specific emission quantities of Alcoa, discussing the potential negative effects of those emissions on human health. Upon release of the NPI in 2003 the *Age* (Fyfe 2003, p. 4) reported:

> Electricity generation remains the state's biggest source of industrial pollution, the Environment Protection Authority's annual snapshot has found.
>
> In the National Pollutant Inventory, to be released today, the Latrobe Valley's brown coal plants dominate the state's top 10 industrial polluters. But the aluminium, petrochemical and glass and motor car manufacturing sectors also score highly on chemical emissions.

While the quantity of media articles identified in the review is not extensive, there is evidence that information relating to the performance of both individual entities and industries published on the NPI has been discussed within both the national and localised media. In discussing the role of the media in the promotion of an issue to the community, Brown and

Deegan (1998) extended the legitimacy theory literature to include media agenda setting theory. Media agenda-setting theory is explained by Ader (1995, p. 300):

> The agenda-setting hypothesis…posits a relationship between the relative emphasis given by the media to various topics and the degree of salience these topics have for the general public. Individuals note the amount of and distribution of media coverage among issues, and this determines the salience of each issue for the individuals. According to the agenda-setting hypothesis, the media do not mirror public priorities as much as they influence them.

Therefore, media agenda-setting theory suggests that media attention given to a particular issue can influence the public agenda (Kok, Goh & Holaday 1999). Furthermore, the level of media attention provided can influence the level of public interest in the issue. Brown and Deegan (1998, pp. 264–265) argue:

> Increased media attention is believed to lead to increased community concern for a particular issue. The media are not seen as mirroring public priorities; rather, they are seen as shaping them.

Adopting Brown and Deegan's (1998) approach, Patten (2002a) examined the environmental disclosures of United States corporations in 10K reports following the introduction of the TRI[52] to determine whether it is necessary for media coverage of a particular issue to be extensive in order for that coverage to be considered a legitimacy threat. He argues (2002a, p. 153):

> …increased media attention can certainly lead to the potential for increased pressures from any of the three sources [that is, dissatisfaction of the public itself, new or proposed political action, and/or increased regulatory oversight], even without significant media exposure. Accordingly, it may be possible to find evidence of public policy pressure related increases in environmental disclosure even without substantial media attention.

Patten (2002a) found that there was a significant increase in environmental disclosures by affected firms as a result of an increase in regulatory oversight pressure even though the attention paid to the TRI in the media was limited.

[52] As discussed in chapter two, the TRI operates in the US and is similar to the NPI.

It may be speculated, therefore, that similar results may occur under the Australian conditions. The NEPC (2002) report on the implementation of the NPI identified a lack of knowledge among the general public regarding the existence of, and availability of, information provided on the NPI; however, as noted in chapter 2, the number of unique hits to the NPI website increased from 1794 in the 2001/02 reporting year to 62256 in 2003/04. In addition, consideration should be given to the level of media attention prior to the first publication of the database in 2000 and to comments made by government at its inception (the period under consideration in this thesis). It is possible to suggest, therefore, that companies may have been uncertain as to the extent, if any, the NPI represented as a legitimacy threat prior to its first publication.

If the corporation believes that its relevant publics have knowledge of and access to the NPI, the corporation may perceive a greater legitimacy threat. On the other hand, if the corporation does not believe that its relevant publics have knowledge of and access to the NPI, a lesser or no legitimacy threat may be perceived. The existing literature suggests corporations that do perceive the NPI as a legitimacy threat may adopt disclosure strategies to manage that threat.

Consequently, the first objectives of this research are to examine the potentially legitimising (and discretionary) nature of voluntary environmental disclosures by determining whether:

1. a change in environmental regulation acts as an impetus to changes in voluntary environmental disclosure practices in annual reports of Australian companies

And, for comparison with previous research, principally that undertaken by Patten (2002b), if:

2. there is a relationship between the quantity of published pollution emissions on the NPI and the quantity of voluntary environmental disclosure in annual reports of Australian corporations.

3.7 Proposition Development of the Research Objectives Relating to the NPI

First, previous empirical research has identified a negative relationship between pollution performance ratings and the quantity of environmental disclosures in annual reports (Patten 2002b). Therefore, it is expected that corporations with higher quantities of pollution

emission data published on the NPI will disclose higher levels of voluntary environmental disclosures in annual reports. Furthermore, as suggested by Patten (2002b), larger corporations would be expected to have greater quantities of emissions. Therefore, for comparison with previous research, the following research proposition may be stated:

P1a. Corporations with greater quantities of published pollution emissions, adjusted by size of corporation, on the National Pollutant Inventory have greater quantities of total voluntary environmental disclosures in annual reports.

Second, previous research has identified a tendency toward the provision of information which is mostly positive in nature (Deegan, Rankin & Voght 2000; Deegan & Rankin 1996). It has been suggested, from a legitimacy theory perspective, that this strategy is useful in diverting attention from the less favourable environmental performance activities of the corporation to those that are more favourable (Lindblom 1994). Therefore, to allow a comparison with previous research the following research proposition is stated:

P1b. Corporations with greater quantities of published pollution emissions, adjusted by size of corporation, on the National Pollutant Inventory have greater quantities of positive voluntary environmental disclosures in annual reports.

Third, previous research has provided evidence that corporations may use voluntary environmental disclosures strategically under certain conditions (Deegan, Rankin & Tobin 2002; Deegan, Rankin & Voght 2000; O'Donovan 1999; Deegan & Rankin 1996). It may also be speculated that a corporation perceiving a potential or actual legitimacy threat from the NPI may be expected to provide greater quantities of voluntary *emission* disclosures in annual reports. Therefore, the following research proposition is stated:

P1c. Corporations with greater quantities of published pollution emissions, adjusted by size of corporation, on the National Pollutant Inventory have greater quantities of voluntary emission disclosures in annual reports.

Previous research has also identified that, in communicating with its relevant publics, an entity may adopt either an avoidance or compliance strategy. An avoidance strategy could result in the suppression of information which may affect legitimacy (Ashforth & Gibbs 1990) or merely ignoring the issue (O'Donovan 2002); hence the organisation may provide minimal

disclosures or not disclose at all. Conversely, an organisation adopting a compliance strategy could attempt to communicate its conformity with social norms and values (Oliver 1991). Therefore, it may be speculated that corporations which perceive the introduction of the NPI as a potential or actual legitimacy threat, and adopt an avoidance strategy may either suppress/ignore the issue (or provide minimal or no disclosures); or alternatively, if adopting a compliance strategy, may include disclosures *concerning* the NPI in the annual report. However, in circumstances where no information is provided, such as those which may be adopting an avoidance strategy, it is problematic to determine from the annual report alone whether the corporation is purposely suppressing or ignoring the NPI, or whether the organisation simply does not perceive the NPI to be a legitimacy threat. Therefore, within the scope of this study a compliance strategy will be examined, and the following research proposition may be stated:

P2a. There is an increase in the quantity of voluntary environmental disclosures discussing compliance with the NPI in annual reports during the NPI implementation period by corporations required to publish emission information on the NPI.

Finally, Lindblom (1994) suggests that a corporation may attempt to divert attention from the problematic (legitimacy threatening) issue by discussing more favourable issues. Consequently, it may be speculated that corporations may discuss good performance in regard to issues relating to the NPI such as pollution/emissions controls and management. Therefore, the following research proposition may be stated:

P2b. There is an increase in the number of corporations providing voluntary environmental disclosures concerning pollution/emissions in annual reports during the implementation period of the NPI by corporations required to publish emission information on the NPI.

3.8 Statement of the Research Objective Relating to s. 299(1)(f) of the Corporations Act

Prior to the introduction of s. 299(1)(f) of the Corporations Law there was a notable absence of legislative requirements for a corporation to disclose its environmental performance, or any initiatives undertaken to improve such performance, in the annual report (Deegan & Gordon 1996). While the corporation also operates within society under the regulations of the various state EPAs, much of this information remains relatively difficult for the majority

of potential users to access. Furthermore, users may not be aware of the existence and/or availability of environmental information.

It has been identified that the community, including investors, is interested in the environmental performance of corporations (Epstein & Freedman 1994; Lothian 1994; Tilt 1994). It is also possible to argue that the previous lack of availability and/or accessibility of environmental performance information may have resulted in many corporations with poor environmental performance records continuing to enjoy an uninterrupted or unchanged provision of resources by society. It would be presumptuous to state that the providers of these resources would cease to support the company if they were aware of the true extent of the company's environmental performance; however, based on the research undertaken by Shane and Spicer (1983), Blacconiere and Patten (1994) and Blacconiere and Northcutt (1997), it could be suggested that companies may face a legitimacy threat from some of their relevant publics when environmental information that could be perceived as negative by stakeholders is publicly disclosed.

Within a voluntary reporting framework the corporation is free to legitimise its environmental performance behaviour through discretionary disclosures within the annual report. Previous research examining voluntary environmental disclosures in annual reports has identified environmental disclosures to be mostly positive (Deegan & Gordon 1996; Deegan & Rankin 1996; Guthrie & Parker 1990) and potentially misleading to users (Rockness 1985)[53]. These results have led to criticisms of the voluntary environmental disclosure system and suggestions that 'the reliability of voluntary environmental disclosure can be questioned' (Berthelot, Cormier & Magnan 2003, p. 20). For example, Deegan and Gordon (1996, p. 198) argue that 'in an unregulated environment, management will be less than objective in its environmental disclosure practices'. Adopting a similar view, Deegan and Rankin (1996, p. 10) state:

> …in the absence of disclosure regulations pertaining to environmental issues, that Australian companies will only provide environmental information which is favourable to their corporate image.

[53] Limited research has examined the impact of voluntary disclosures upon users of same. While outdated, the Rockness study does provide empirical evidence that unregulated disclosures may potentially mislead users of that information.

Neither Deegan and Gordon (1996) nor Deegan and Rankin (1996) suggest outright that mandatory reporting requirements should be introduced. It is clear, however, that the authors believe that 'in the absence of disclosure regulations' and 'in an unregulated environment' disclosure practices are questionable. Guthrie and Parker's (1990) comparative international analysis of social and environmental disclosures in corporate annual reports found that the US provided significantly greater quantities of 'bad news' information than either the UK or Australia. Guthrie and Parker (1990) suggest that differences in disclosure practices between the three countries appear to be a result of differences in the level of government or accounting body regulations. The high levels of disclosure regulation in the US resulted in more corporations reporting on negative events in the annual report than in Australia where only minimal regulations were in effect. Considering Guthrie and Parker's (1990) results and comments from Deegan and Gordon (1996) and Deegan and Rankin (1996), it could be speculated that mandatory disclosure requirements may be expected to result in environmental disclosure practices that are more reflective of actual environmental performance.

Although mandatory annual report environmental disclosures have been required since 1 July 1998, there is an absence of Australian empirical research examining differences in the disclosure practices of corporations within voluntary and mandatory environmental disclosure systems in the annual report. Four studies undertaken in the US by Wiseman (1982), Freedman and Jaggi (1982), Freedman and Wasley (1990), and Hughes, Anderson and Golden (2001) provide some insight into voluntary and mandatory environmental disclosures and their relationship to, or indication of, corporate environmental performance.

Wiseman (1982) examined voluntary environmental disclosures in the annual reports of twenty-six US firms across three industries for 1972, 1974 and 1976[54]. Wiseman (1982, p. 53) argued that the absence of a 'reporting system to account for corporate environmental performance' led to 'the current state of environmental reporting by corporations [remaining] principally voluntary'. Using an indexing procedure to determine the quality of voluntary disclosures, Wiseman (1982) compared the annual report disclosures with pollution performance ratings provided by the Council on Economic Priorities (CEP). The disclosures were not found to be a true representation of the companies' performances. Overall the

[54]The sample differed in each year considered. The steel and pulp and paper industries were included in 1972, the oil industry in 1974, and the steel industry in 1976.

disclosures were described as 'incomplete', 'general', and 'questionable' in their 'usefulness' for 'inter-company performance comparisons' (Wiseman 1982, p. 60).

Wiseman's (1982) analysis focussed on *voluntary* environmental disclosures in *annual reports*. The study did not consider the quality or content of *mandatory* pollution information disclosures required by the United States SEC. In 1973, the SEC insisted companies include information relating to pollution performance in annual reports filed with the SEC. These reports are referred to as 10Ks and represent the mandatory pollution performance disclosures of listed corporations. Freedman and Jaggi (1982, p. 168) explain:

> The underlying rationale for public disclosure of such information is that this information is perceived to be important for investors' decisions since it is expected to aid investors in evaluating the effectiveness of a firm's pollution abatement program and the risks associated with potential sanctions or fines for violating the pollution laws …[and] may also be useful in evaluating managerial effectiveness and a firm's potential economic performance since pollution control may involve the use of better and more modern equipment.

The focus of previous studies on voluntary annual report disclosures and the exclusion of the content of mandatory disclosures were noted by Freedman and Jaggi (1982). Consequently, the authors examined the association between mandatory pollution disclosures in 10Ks and pollution performance using the CEP pollution performance index. Freedman and Jaggi (1982, p. 171) were unable to identify an association between pollution performance and mandatory pollution disclosures and concluded 'that pollution disclosures do not reflect actual pollution performance'. While both studies used the CEP ratings as a pollution performance measure, Wiseman (1982) adopted a different approach to measuring the voluntary pollution disclosures in her study; however, the results of these two studies suggest that mandatory disclosures were not significantly more reflective of actual pollution performance than the voluntary disclosure system.

In 1990, Freedman and Wasley published the results of a comparative study that specifically focussed on differences between voluntary disclosures made in annual reports and the mandatory disclosures prescribed by the SEC in 10Ks. The authors undertook a correlational analysis of voluntary environmental disclosures in annual reports and environmental performance. A correlational analysis of mandatory environmental disclosures in 10Ks and environmental performance was also undertaken. Environmental performance was

operationalised using CEP ratings as in the previous two studies. The study covered four industries in selective years between 1972 and 1976. Ninety-two percent of the correlations between voluntary disclosures and the CEP ratings were found to be insignificant (Freedman & Wasley 1990, p. 188). Similarly, 96 per cent of the correlations relating to mandatory disclosures in 10Ks and the CEP ratings were not significant (Freedman & Wasley 1990, p. 190). These results were consistent with those obtained in the studies by both Freedman and Jaggi (1982) and Wiseman (1982) and the authors concluded:

> …that neither voluntary annual report environmental disclosures, nor mandatory 10k environmental disclosures are indicative of actual firm environmental performance. These findings may suggest the potential need to regulate voluntary annual report disclosures made by firms, and/or the need for the SEC to improve its mandatory environmental disclosure requirements to make them more indicative of actual firm environmental performance.
> (Freedman & Wasley 1990, p. 191)

More recently, Hughes, Anderson and Golden (2001) investigated whether a change in disclosure requirements in the mandatory section of the annual report resulted in changes in disclosure practices in the voluntary sections of the annual reports of fifty-one US manufacturing firms. The authors adopted similar methods to those used by Wiseman (1982) and Freedman and Jaggi (1986) and incorporated a content evaluation based on whether the disclosures were quantitative, descriptive, vague or immaterial. These classifications were then weighted from four to one respectively. They identified that companies were more inclined to provide information of a negative nature, such as litigation and the impact of environmental regulations, in the mandatory sections of the annual report. It was also identified, that negative issues in the mandatory section were not counter-balanced by positive[55] discussion of those same issues in the voluntary section; however, it was found that poor environmental performers provided greater levels of both mandatory disclosures (as would be expected) and voluntary disclosures. They concluded that users of reports should be made aware that voluntary disclosures provide limited information on actual environmental performance and that the mandatory disclosures 'seem to convey the most useful insight into past environmental performance' (Hughes, Anderson & Golden 2001, p. 238).

[55] The authors use the term 'positive' although there was no clear indication from the research method how 'positive' disclosures were identified.

While the results of these studies suggest that mandatory disclosures may also not be reflective of actual environmental performance, several issues must be addressed. Firstly, the content analyses methodologies used were relatively simple. Wiseman's index required the identification of disclosures regarding various themes relating to the environment and pollution including economic factors, litigation, pollution abatement, and other environmentally related information (Wiseman 1982, p. 56). These were then weighted in order of preference with monetary and quantitative measures achieving the highest weighting of three, followed by a score of two for non-quantitative specific information, one for general disclosure, and zero for no disclosure (Wiseman 1982, p. 55). Freedman and Wasley (1990) and Hughes, Anderson and Golden (2001) also adopted disclosure indexes similar to that used by Wiseman (1982).

Secondly, unlike many of the Australian studies, there was no detailed consideration of the quantity of the disclosures included in the analysis. Therefore, it is not possible to conclude whether significant differences actually existed between the quantity of mandatory and voluntary disclosures of the corporations. An extensive body of research has shown that corporations that may be considered poor environmental performers provide greater quantities of environmental disclosures (Al-Tuwaijri, Christensen & Hughes II 2004; Patten 2002b; Deegan, Rankin & Voght 2000; Li, Richardson & Thornton 1997; Deegan & Rankin 1996; Patten 1992).

Furthermore, unlike many of the more recent studies, particularly those undertaken in Australia (Deegan & Gordon 1996; Deegan & Rankin 1996), the studies by Freedman and Jaggi (1982), Wiseman (1982) and Freedman and Wasley (1990) did not include a consideration of the nature of the disclosure; that is, whether the corporation is reflected positively, negatively or otherwise by the disclosure content. The annual report is considered an important tool for corporations to *communicate* information to users (O'Donovan 1999). Therefore, the manner in which the corporation portrays its activities in the report is indicative of how its management is 'selling' it to users. Australian research has shown that voluntary disclosures in annual reports are mostly positive in nature (Deegan & Gordon 1996; Deegan & Rankin 1996). Thus, corporations have attempted to portray themselves in a positive manner when discussing issues relating to the environment.

Finally, pollution or environmental performance was assessed against either mandatory *or* voluntary disclosures in the Freedman and Wasley (1990) study. No direct comparison was

undertaken between the voluntary and mandatory disclosures to identify differences in disclosure practices under the two systems. Consequently, when combined with an absence of consideration of the nature and quantity of the disclosures included in the analysis, it is not possible to conclude whether significant differences actually existed between disclosure practices where voluntary and mandatory disclosures appear in the same document.

Recent research has shown that, as would be expected, corporations do provide information regarding environmental performance following the introduction of mandatory environmental reporting requirements. Bebbington (1999) identified an improvement in the quality of environmental reporting following the introduction of the Green Accounts Act 1995 in Denmark. The Danish Environmental Protection Agency (2000, p. 6) defines quality relating to the content of the reports being the existence of compulsory information, important environmental information and good reporting. More than 50 per cent of Danish enterprises complied with these quality requirements. The report also identified the inclusion of 'comprehensive voluntary information' in the green accounts along with the compulsory requirements (Danish Environmental Protection Agency 2000, p. 8). A summary of the inclusion of both compulsory and voluntary information is provided in Table 5.

Table 5: Information and disclosure type included in Danish Green Accounts 1999

Information	*Disclosure type*	*% of companies disclosing*[56]
Statement on choice of environmental information	Compulsory	73
Statement of significant deviations from previous year's accounts	Compulsory	27
Information on employee involvement	Compulsory	63
Working environment related to polluting substances in production processes	Compulsory	34
Information on external audit	Compulsory/voluntary	9
Environment policy and goals	Voluntary	52
Negative environmental aspects	Voluntary	17
Mentions complaints form neighbours	Voluntary	3
Information on industrial accidents	Voluntary	13

(Source: Danish Environmental Protection Agency 2000, p. 8)

[56] There is no detailed explanation why non-compliance with certain requirements occurred. It is stated, however, that companies that did not comply with any of the requirements would be followed-up via administrative procedures (Danish Environmental Protection Agency 2000).

Table 5 shows that enterprises were more likely to provide positive information rather than negative information in both the compulsory and voluntary disclosures. Of the compulsory information, 73 per cent of companies provided information on their choice of environmental information and 63 per cent provided information on employee involvement. Only 34 per cent and 27 per cent of enterprises provided disclosures on polluting substances in production processes and significant deviations from previous year's accounts respectively. In the voluntary disclosures 52 per cent of enterprises discussed environmental policy and goals, with only 17 per cent discussing negative environmental aspects, 13 per cent discussing industrial accidents and three per cent mentioning complaints from neighbours. This suggests that even in a compulsory disclosure environment corporations remain reluctant to provide negative information in reports.

Similarly, Frost (2001) found a significant increase in the number of corporations discussing requirements to comply with, and environmental performance with respect to, environmental regulations following the introduction of s. 299(1)(f). As expected, an increase in the number of companies reporting breaches of environmental regulations in the directors' report was identified, although the number was minimal. This could certainly be due to there being no breaches to report for the remaining companies; however, as discussed in chapter 2, ASIC had expressed leniency in prosecutions for the section's early stages and previous empirical evidence has shown that companies do not favour providing negative environmental disclosures in annual reports (Deegan & Gordon 1996; Deegan & Rankin 1996).

Considering the Danish experience, however, the introduction of Australian mandatory reporting requirements may act as a stimulus to encourage companies to reduce their impact on society[57]. This may be achieved as companies attempt to avoid the *potential* scrutiny of their operations following the disclosure of non-compliance with environmental regulations within the annual report as is required by s. 299(1)(f). Inclusion of mandatory reporting requirements in the annual report should provide users of the annual report with a factual account of the entity's compliance with environmental regulation over each reporting period.

[57] According to Bebbington (1999) managers of corporations in Denmark suggested that the Green Accounts Act is a stimulus for improved environmental performance. Forty-one percent of enterprises felt that environmental improvements occurred following the introduction of the green accounts (Danish Environmental Protection Agency 2000, p. 15). Of these, improvements occurred in the areas of energy, water and waste, resource consumption, wastewater and additives, and reduced emissions to air and soil (Danish Environmental Protection Agency 2000); however, it is premature in the life of s. 299(1)(f) and beyond the scope of this thesis to determine whether its impact has resulted in an improvement in environmental performance.

Therefore, disclosure of actual environmental performance in the statutory section should permit users to obtain a clearer picture of corporate environmental performance than under a voluntary system alone.

While this could be the expectation of the section, some limitations are apparent. First, s. 299(1)(f) only requires companies to report on whether they 'are subject to any particular and significant environmental regulation under a law of the Commonwealth or of a State or Territory' and 'give details of the entity's performance in relation to environmental regulation'. Hence the scope of the requirements is relatively narrow.

Second, as previously discussed, Guthrie and Parker (1990, p. 172) argue that corporations may adopt a minimalist approach when complying with mandatory disclosure requirements. These concerns were confirmed in a recent complaint from the Australian Conservation Foundation (ACF) to ASIC for breaches of the disclosure requirements of the section by Energy Resources of Australia Limited (ERA) (ACF 2005). The ACF argue that ERA did not comply with the requirements of the section in its 2004 annual report following several breaches of the *Mining Management Act (NT)* and charges relating to those breaches[58]. The ACF refers to the s. 299(1)(f) disclosures made by ERA which state that:

> The Ranger operation has had no detrimental impact on the surrounding environment over its 23 years of operation.
>
> ERA operates in accordance with relevant Federal and Territory environmental legislation as well as site-specific environmental licences, permits and statutory authorisations.
>
> Under ERA's authorisation to operate, ERA is required to report to the Minister for Mines and Energy (NT), the Office of the Supervising Scientist, the Commonwealth Department of Industry, Science and Resources of the Northern Land Council, any infringements of the conditions and requirements of the authorisation. This includes any incident that is a divergence from strict compliance with statutory requirements, even if this incident has no detrimental environmental impact.

[58] The breaches related to findings by the Office of the Supervising Scientist which found that workers at the mine had washed and consumed contaminated water, and that a vehicle deemed to be contaminated had left the mine site.

(96)

> Further details of ERA's environmental performance are included in the Environment Section of the Annual Report page 13.
> (ERA Annual Report 2004, p. 21)

The ACF argue that ERA failed to comply with s. 299(1)(f) in not disclosing the pending court cases nor the breaches which occurred during the reporting period. In addition the ACF refers to a disclosure in the voluntary section of the annual report under 'Radiation Management' which simply states that 'Improving the management of radiation at Ranger was a focus in 2004 following a number of highly publicised breaches of ERA procedures resulting in the company's prosecution under the Mining Management Act' (ERA Annual Report 2004, p. 12). Energy Resources argued that the company could face contempt of court charges if it published information regarding the breaches. The ACF complained that pending court action should not be considered a reason to fail to comply with the Corporations Act (ABC News Online, April 10, 2005).

Finally, the section operates within a voluntary/mandatory system in which companies are able to include information in the non-statutory section of the annual report which is not subject to reporting requirements or regulator scrutiny[59], and is provided at the discretion of management. As previously discussed, voluntary disclosures can be a strategic tool used by management to create or alter public perceptions of a company's environmental performance (O'Donovan 1999). Therefore, where a legitimacy threat is perceived, corporations may provide voluntary environmental disclosures in the annual report (Zeghal & Ahmed 1990) to divert attention away from less favourable environmental performance information (Lindblom 1994).

Therefore, as the scope of voluntary disclosures can be much greater than those of s. 299(1)(f), and that mandatory disclosures may be minimal, it may be speculated that mandatory disclosures could be overshadowed or counteracted by the voluntary disclosures appearing in the annual report. This would be of particular concern considering the original motivation for the inclusion of the section in the Corporations Act was to provide users of the annual report with information for decision purposes.

Consequently, the final research objective of this thesis is to examine whether:

[59] See section 2.8 for information on regulatory enforcement relating to s. 299(1)(f).

c. there are significant differences between environmental disclosure practices in the voluntary sections of Australian corporate annual reports for corporations reporting non-compliance, and those not reporting non-compliance, with environmental regulations in the directors' report pursuant to the requirements of section 299(1)(f).

This objective will be addressed through a comparative examination of the nature and quantity of voluntary environmental disclosures in annual reports of Australian corporations reporting non-compliance with environmental regulation and Australian corporations reporting no non-compliance in annual reports pursuant to the requirements of s. 299(1)(f).

3.9 Proposition Development of the Research Objective Relating to s. 299(1)(f) of the Corporations Act

It has been argued that the scope of mandatory annual report reporting in Australia is limited to the narrow requirements of s. 299(1)(f). In contrast, the scope of voluntary reporting is much greater with the decision on what and how much to disclose determined by the corporation. Consequently, the current voluntary/mandatory reporting system may be seen as rendering mandatory disclosures impotent, particularly when companies have been required to disclose breaches of environmental regulation as per the section.

The introduction of s. 299(1)(f) provides an opportunity to examine corporate environmental disclosure behaviour following the introduction of the section. Guthrie and Parker (1990) argued that in a mandatory disclosure environment companies would adopt a minimalist approach to disclosure. The section requires an entity to 'give details of the entity's performance in relation to environmental regulation'. The section does not specify whether the details relate to information about compliance with regulations or non-compliance. The AIG also recommended a minimalist approach in its guidelines released in 1999. ASIC stated in practice note 68 paragraph 74 that the disclosures would not need to be as detailed as those given to regulatory authorities but, as stated in practice note 68 paragraph 75, that companies should comply 'with the spirit as well as the terms of the law'. Consistent with the expectations of Guthrie and Parker (1990) and the recommendations of the AIG, Frost (2001) found that while an increase in the number of corporations reporting the existence of breaches did occur following the implementation of the section, the number of companies providing

specific details of those breaches was minimal. In addition, Frost (2001, p. 16) expressed concern at 'the number of firms that opted for disclosure of environmental performance issues within the voluntary section of the annual report'.

Prior to the introduction of s. 299(1)(f), Australian companies were found to report significantly high levels of positive information when voluntarily providing environmental information in the annual report (Deegan & Gordon 1996; Deegan & Rankin 1996; Guthrie & Parker 1990) and have continued to do so following its introduction (Deegan, Rankin & Tobin 2002; Deegan, Rankin & Voght 2000). In addition, Deegan and Rankin (1996) identified an increase in the quantity of disclosures following occurrences of environmental fines and prosecutions[60].

Hence, this study will examine whether differences exist between the quantity of voluntary environmental disclosures by companies mentioning non-compliance and companies not mentioning non-compliance with environmental regulations in the directors' report. In addition, an examination of differences between the quantity of positive voluntary environmental disclosures of companies reporting non-compliance, and those not reporting non-compliance, with s. 299(1)(f) will be undertaken. As such the following research propositions are stated:

P3a. Australian listed corporations reporting non-compliance in accordance with the requirements of s. 299(1)(f) provide greater quantities of environmental disclosures in the voluntary section of the annual report than companies reporting no non-compliance.

P3b. Australian listed corporations reporting non-compliance in accordance with the requirements of s. 299(1)(f) provide greater quantities of positive environmental disclosures in the voluntary section of the annual report than companies reporting no non-compliance.

[60] Frost (2001) identified an increase in total environmental disclosures and negative environmental disclosures in annual reports during the period immediately following the implementation of s. 299(1)(f); however, unlike Deegan, Rankin and Tobin (2002), Deegan, Rankin and Voght (2000), Deegan and Gordon (1996), Deegan and Rankin (1996) and Guthrie and Parker (1990), Frost (2001) did not differentiate between voluntary and mandatory environmental disclosures.

3.10 Chapter Summary

This chapter provided an overview of theoretical perspectives commonly used in the voluntary environmental disclosure literature and introduced the theoretical perspective to be utilised in this research, being legitimacy theory. The objectives of the thesis were outlined and the propositions to investigate the objectives stated.

Political economy theories have largely superseded the use of economics-based theories in explaining the environmental disclosures practices of corporations. Economics-based theories such as Positive Accounting Theory focus on self-interest and wealth maximisation as the sole or main objective of corporate environmental disclosure behaviour (Gray, Kouhy & Lavers 1995b). In contrast, political economy theories including stakeholder and legitimacy theory incorporate social, political and economic factors in the analyses of corporate annual report disclosures (Guthrie & Parker 1990). While it has been argued that legitimacy theory and stakeholder theory should be seen as overlapping perspectives (Gray, Kouhy & Lavers 1995b) it is an assumption of this thesis that conflicts and power relations between different groups within society exist; however, this thesis will not attempt to determine which groups are corporate stakeholders nor the power relationships that exist within society.

Legitimacy theory has emerged as the dominant explanatory theory in the voluntary environmental disclosure literature (Cunningham & Gadenne; 2003; Deegan 2002; Deegan, Rankin & Tobin 2002; Milne & Patten 2002; O'Donovan 2002; O'Dwyer 2002; Patten 2002a; Wilmshurst & Frost 2000; O'Donovan 1999; Deegan & Gordon 1996; Deegan & Rankin 1996; Patten 1992; Patten 1991; Guthrie & Parker 1989; Tinker & Neimark 1987; Hogner 1982). Legitimacy theory focuses on the corporation's relationship with society. Underlying legitimacy theory is the notion of the 'social contract' between the corporation and the society within which it operates (Shocker & Sethi 1974). Where a disparity exists between the norms and values of the corporation and that of society a legitimacy gap may occur (O'Donovan 2002). Corporations that adopt a strategic posture to address legitimacy may utilise legitimating techniques that may be substantive or symbolic (Ashforth & Gibbs

1990). The techniques adopted depend on whether the corporation is attempting to gain, maintain or repair legitimacy and the strategy adopted (O'Donovan 2002; Oliver 1991; Ashforth & Gibbs 1990).

This thesis investigates firstly, and in comparison with the research undertaken by Patten's (2002b) US study, whether there is a relationship between the level of pollution emissions published on the NPI and the quantity of voluntary environmental disclosures, and positive voluntary environmental disclosures, in annual reports. Corporations with higher levels of published pollution emissions could be expected to perceive the NPI as a potential or actual legitimacy threat. Where a potential or actual legitimacy threat is perceived corporations may attempt to reduce the threat by providing environmental disclosures in the annual report (Zeghal & Ahmed 1990). This approach is considered useful in altering community perceptions of company performance (O'Donovan 1999) and diverting attention from less favourable environmental performance activities (Lindblom 1994). If these strategies were adopted, it would be expected that corporations facing a greater legitimacy threat from the NPI will provide greater quantities of voluntary environmental disclosures in annual reports; will have greater quantities of positive voluntary environmental disclosures in annual reports; and, will have greater quantities of voluntary emission disclosures in annual reports.

Secondly, this research will investigate the potentially legitimising (discretionary) nature of voluntary environmental disclosures by examining whether environmental regulation acts as an impetus to changes in annual report environmental disclosure practices. Oliver (1991) suggests that corporations that perceive the existence of a legitimacy threat may adopt a "compliance" approach. Where this approach is adopted, the corporations would convey compliance with the norms, values and regulations of society in the annual report. Therefore, corporations would begin to provide information relating to compliance with the NPI and pollution management in the annual report during the implementation period of the NPI.

Finally, it investigates whether Australian corporations perceive the introduction of mandatory annual report disclosure requirements (s. 299(1)(f) of the Corporations Act) as a potential legitimacy threat. As discussed above, where a legitimacy threat is perceived, corporations may provide voluntary environmental disclosures in the annual report (Zeghal & Ahmed 1990) and divert attention away from less favourable environmental performance information to more favourable performance information (Lindblom 1994). Consequently, corporations required to report non-compliance with environmental regulations in the

directors' report pursuant to s. 299(1)(f) may provide greater quantities of voluntary environmental disclosures and positive voluntary environmental disclosures than those reporting compliance pursuant to the section.

The research method utilised to achieve the objectives outlined in this chapter will be discussed in chapter 4. The chapter will commence with a discussion on selection of the sample corporations. This will be followed by a detailed discussion on the content analysis method used by this study including reliability and validity issues. Finally, a description of key variables is provided.

Chapter 4

RESEARCH METHOD

4.1 Introduction

The purpose of this chapter is to outline the research design used to address the objectives and test the propositions stated in chapter 3; that is, to examine corporate environmental disclosure practices during the implementation of the National Pollutant Inventory and the inclusion of section 299 (1)(f) in the Australian Corporations Law. The chapter proceeds with an explanation of the sample selection process. This is followed by a brief review of alternative measures of environmental disclosures adopted in previous research. A detailed discussion on the content analysis method utilised including the selection of the disclosure medium, coding system and unit of measurement, is provided. A description of key variables used in the analysis is provided, and finally, the statistical techniques utilised are outlined.

4.2 Sample

A purposive sampling technique was used in this study. Purposive sampling 'selects cases with a specific purpose in mind' (Neuman 2000, p. 198). Purposive sampling is a form of non-probability sampling. In contrast to probability sampling 'in which every member of the population will have a known, nonzero probability of selection' (Zikmund 1997, p. 427), researchers using a non-probability sampling technique do not attempt to draw a

representative sample from the population. The researcher is concerned with obtaining knowledge about the group being studied (Neuman 2000). As the researcher selects the criteria and the elements to be included in the sample, external validity may be reduced. External validity is related to the ability to generalise the results of a specific research project in a different setting with different participants (Krippendorff 1980). Due to the arbitrary nature of non-probability sampling techniques there are no suitable statistical methods to measure random sampling error (Zikmund 1997).

In order for corporations to be included in the sample of this study, they were required to meet several criteria, primarily:

1. appearing on the National Pollutant Inventory database for the 1999–2000 reporting year; therefore, being subject to environmental regulations per s. 299(1)(f) of the Corporations Act, and;
2. being listed corporations having annual reports available on the Connect4 database for the financial years ending 1997, 1998, 1999, and 2000.

The NPI is an external disclosure source for environmental performance information of Australian corporations. According to Senator Robert Hill, former Minister for the Environment and Heritage, the NPI 'allows all Australians to find out what large factories are discharging into the environment, as well as showing what actions a factory may be taking to reduce its emissions of pollution'. In addition to being 'an invaluable environmental management tool for governments' and 'an unprecedented information resource for the community', it is also expected that the NPI will be 'an impetus for cleaner production for industry' (Hill 2000). Companies with emission disclosures on the NPI would also have compliance responsibilities with environmental regulations in various jurisdictions under s. 299(1)(f) of the Corporations Act. Therefore, the sample was used for both the propositions relating to the NPI and those relating to s. 299(1)(f)[61].

[61] A larger sample of companies required to report on s. 299(1)(f) could have been identified as many companies are subject to the requirements of the Corporations Act; however, for the purposes of this research it was necessary to identify those companies that would be subject to 'any particular and significant environmental regulation under a law of the Commonwealth or of a State or Territory' in accordance with the requirements of s. 299(1)(f). Those subject to the reporting requirements of the NPI were easily identifiable as satisfying these criteria.

The resultant sample comprised twenty-five[62] publicly listed companies reporting on the NPI in the 1999–2000 reporting year[63], and with annual reports appearing on the Connect4 database[64] during the implementation period of the NPI being 1997 to 2000 inclusive[65]. The companies came from several industries including oil and gas producers, mining, packaging and building materials, chemical and pharmaceutical, and food, wine and retail[66]. A summary of the number of sample corporations from each industry is provided in Table 6:

Table 6: Industry type of sample companies

Industry Groups	*Frequency*
Building, Packaging	2
Chemical, Fertilizer	4
Mining, Oil, Gas	9
Diversified Industrial	2
Food, Wine	5
Timber and Board	2
Household Goods	1
Total	25

Restricting the sample to those with pollution emissions recorded on the NPI resulted in a relatively small sample; however as shown in Table 7, sample sizes in previous research examining environmental disclosures based on environmental or pollution based performance are similar. It should be noted, however, that many studies were undertaken in the United

[62] Initially, twenty-six firms were identified which satisfied the dual requirements for sample selection; however, BHP was excluded from the sample due to extensive and continual media coverage during the test period relating to its activities on the Ok Tedi River in Papua New Guinea.

[63] The 1998-1999 and 1999-2000 NPI reporting periods were voluntary. The sample was drawn from the 1999-2000 NPI year as a larger number of companies disclosed on the NPI (25 companies) than in the 1998-1999 year (17 companies).

[64] The Connect4 database provides complete annual reports for the Top 500 Australian publicly listed companies from 1992 onward. Reports can be searched, downloaded and printed. Connect 4 also provides a quick link to Australian Company websites. A cross-referencing technique was employed to identify corporations that appeared on both the NPI 1999/00 (updated version as at 10th May 2001) and Connect4 1997 to 2000 databases inclusive.

[65] The implementation period is defined in order to address objective 1 outlined in section 3.6. The draft National Environment Protection Measure for the National Pollutant Inventory was released for public comment by the NEPC on 12 June 1997 with details on its availability promoted in state and national newspapers. The revised draft NEPM was released for further comment on 8 October 1997 with the final draft measure adopted by the NEPC on 27 February 1998. The period from 1 July 1998 to 30 June 1999 represented the first NPI reporting year with 1 July 1999 to 30 June 2000 being the second NPI reporting year.

[66] The list of sample corporations is provided in Appendix C.

States which has a larger number of listed corporations than Australia[67]. Therefore, when considered in comparison to other published Australian studies (for example Deegan & Gordon 1996[68]; Deegan & Rankin 1996) the sample size of twenty-five was considered appropriate for an Australian study.

Table 7: Summary of samples/population of previous empirical studies examining environmental disclosure and environmental performance relationships

Author/s	*Year*	*Sample size*	*Country*	*Industry or Sample detail*
Ingram & Frazier	1980	40	United States	electric utilities, iron and steel, pulp and paper, petroleum refining
Freedman & Jaggi	1982	31	United States	steel, oil refining, paper and pulp, chemicals industries
Wiseman	1982	26	United States	steel, oil, pulp and paper industries
Rockness	1985	26	United States	steel, oil, pulp and paper industries
Belkaoui & Karpik	1989	23	United States	1973
Freedman & Wasley	1990	50	United States	steel, oil, paper and pulp, electric utility industries
Patten	1992	21	United States	petroleum industry
Deegan & Rankin	1996	40	Australia	20 prosecuted and 20 not prosecuted by EPA
Balabanis, Phillips & Lyall	1998	56	United Kingdom	20 industries on London Stock Exchange
Deegan, Rankin & Voght	2000	41	Australia	Companies in industries affected by environmental and social incidents
Patten	2002b	131	United States	Companies with emissions published on the TRI

[67] There are approximately 1500 listed companies in Australia.

[68] Deegan and Gordon's (1996) initial sample was 197 firms from the Australian Graduate School of Management annual report file for 1991. This sample was then reduced to those firms that provided voluntary environmental disclosures; however, a sample of twenty-five firms was used to determine the mean of voluntary environmental disclosures for the years 1980, 1985, 1988 and 1991.

4.3 Environmental Disclosure Measurement in Previous Research

A review of past research shows several methods used to operationalise environmental or social disclosure variables. The majority of studies have used content analysis techniques based on indexing and weighting scales (Patten 2002b; Freedman & Wasley 1990; Freedman & Jaggi 1982; Wiseman 1982) or unitising procedures (see Deegan, Rankin & Tobin 2002; Deegan, Rankin & Voght 2000; Deegan & Gordon 1996; Deegan & Rankin 1996; Hackston & Milne 1996; Gray, Kouhy & Lavers 1995b; Zeghal & Ahmed 1990; Guthrie & Parker 1989; Cowen, Ferreri & Parker 1987; Trotman & Bradley 1981; Ingram & Frazier 1980).

According to Abbott and Monsen (1979) the simplest form of content analysis techniques identifies the presence or absence of the mention of a particular phenomenon in a document. They argue that this basic analysis can be increased in complexity by extending the number of categories or events to be identified in the document. For example, the Beresford and Ernst and Ernst social disclosure ratings are based on the identification of discussion of a number of issues in the annual report (Abbott & Monsen 1979). For each category, the corporation receives a score of zero for no disclosure and a score of one for disclosure of the issue. The scores are summed over all categories to give a rating for the corporation. This approach remains popular in the literature. Li, Richardson and Thornton (1997) adopted a nominal measurement approach in a Canadian study. In contrast to many studies in the literature, an extensive range of documents was examined including annual reports, information forms, quarterly reports, those required by environmental disclosure regulations and press releases. Again, disclosure was measured as a one for disclosure of each of the stipulated environmental incidents or a zero for no disclosure. Patten (2002b) adopted a similar approach in an examination of changes in environmental disclosures in 10Ks in the period surrounding the release of the 1988 TRI data. Sample corporations were given a score of one for the inclusion of any or all of eight content issues being:

1. discussion or mention of specific environmental regulations;
2. discussion or mention of the firm's processes, facilities, or product innovations relative to reduction of environmental degradation;
3. statement or discussion of the company's concern for the environment;
4. statement or discussion of the company's environmental compliance status;

5. disclosure of current or past years' capital expenditures for pollution control or abatement;
6. disclosure of projected future capital expenditures for pollution control or abatement;
7. disclosure of current or past years' operating costs for pollution control or abatement;
8. disclosure of projected future operating costs for pollution control or abatement.

(Patten 2002b, pp. 772-773)

As a result, corporations scored between zero for no disclosure and up to eight for inclusion of all items. The "presence or absence" method is useful in identifying the mention of some environmentally related issues in the annual report; however, the method does not consider the quantity and quality of disclosures, and the importance of particular types of disclosures to users.

One of the earliest studies to also consider quality of disclosures was Wiseman (1982) who used content analysis based on both an indexing *and* disclosure rating system. As displayed in Table 8, eighteen items of information were included in the index from four broad categories – economic factors, environmental litigation, pollution abatement items and other environmental items. Annual reports were examined for the existence of disclosure relating to the information items. The disclosures present in the report were then quality-rated according to the extent of specificity in the disclosure. Disclosures that were monetary or quantitative scored the highest score of three. Information specific to the company but presented in non-quantitative terms scored a rating of two, with a rating of one for items discussed in general terms. Freedman and Wasley (1990) and Patten (1992) also based their content analysis approach on that used by Wiseman (1982).

Table 8: Index and weighting scheme by Wiseman (1982)

Disclosure type	*Weight*
Monetary or qualitative	3.0
Non-quantitative specific	2.0
General	1.0
No disclosure	0.0

Freedman and Jaggi (1982) used an index and weighting scale in an analysis examining the association between corporate pollution disclosures, pollution performance, and economic performance. The authors, however, focussed on pollution related information in the disclosure analysis and as a result the number of items identified were fewer than those included by Wiseman (1982). Freedman and Jaggi (1982) categorised and weighted disclosure items according to the scale in Table 9.

Table 9: Index and weighting scheme by Freedman and Jaggi (1982)

Disclosure item	*Weights*
EPA standards for current emissions and firm's performance	2.5
Future capital expenditures	2.0
Current capital expenditures	1.5
Past capital expenditures	1.5
Descriptive with percentage	0.5
Descriptive	0.5

As noted above, the authors not only distinguished between monetary disclosures and descriptive disclosures, but also weighted the monetary disclosures according to whether they related to past, current or future capital expenditures. The inclusion of time-related categories is similar to the approach adopted by Ingram and Frazier (1980).

While these methods appear useful in identifying the presence of items important to the researcher's analysis, they do not examine the quantity of disclosures in the annual report relating to particular issues; that is, company A may provide one sentence whereas Company B may provide six sentences. Thus, this method does not allow for differences in disclosure practices in terms of quantity (see section 4.4.2 for discussion on quantity of disclosure). Furthermore, the rating system is 'subject to a certain degree of arbitrariness' (Wiseman 1982, p. 55). Consequently, the importance of the type of disclosure in a rating system is, to an extent, subjective.

4.4 Content Analysis

Consistent with previous research, content analysis was used in this study to examine the environmental disclosures of the sample companies from annual reports in the associated periods. Content analysis is described as 'a research technique for making replicable and valid inferences from data to their context' (Krippendorff 1980, p. 21). Ingram and Frazier (1980) explain that content analysis is distinguishable from other textual analysis techniques as it allows the text to be reduced to a quantitative form.

Krippendorff (1980) proposes several advantages of using content analysis. Firstly, content analysis is a non-reactive or unobtrusive technique. An important factor of non-reactive research is that the person, group or organisation being studied is not aware of that fact (Neuman 2000). Instead, the object of the study behaves "naturally" and the researcher is left with documents, text, video or verbal communication for analysis. Non-reactive research avoids the effects of non-response, interviewer and social desirability bias which may occur when using questionnaires or conducting interviews (Neuman 2000). Secondly, the researcher can accept data in many forms (Krippendorff 1980) which is useful where the information sought by the researcher may exist in a variety of forms. For example, corporations may release environmental information through mediums such as annual reports, websites, press releases, verbal statements or advertisements. Thirdly, content analysis allows the researcher to investigate not only the number of times a particular phenomenon occurs but also allows an investigation of the underlying meaning or context of the material being examined (Krippendorff 1980). The flexibility to delve deeper into the material expands the scope of the analysis where required; that is, the researcher can use content analysis to varying degrees from simply counting the occurrence of a particular word or phrase to seeking underlying themes and meanings within statements. Finally, large quantities of data can be analysed using content analysis across a variety of mediums. Consequently, the techniques for ensuring replicability in the content analysis process means that more than one coder can be used to analyse the material.

4.4.1 Disclosure medium

Krippendorff (1980) suggests that the selection of documents to be used in content analysis is an important stage. In previous research investigating corporate social and environmental disclosures, a range of disclosure mediums has been used either individually or in combination of several mediums. These include annual reports (see authors below), 10-Ks[69] and environmental reports (Harte & Owen 1991; Freedman & Wasley 1990; Freedman & Jaggi 1982), advertisements and brochures (Zeghal & Ahmed 1990), and media reports (Brown & Deegan 1998). Corporations may also disclose information on websites, CD ROMs and videos (Department of Environment and Heritage 2005; Zeghal & Ahmed 1990).

A frequently used document in previous corporate disclosure research has been the annual report (Unerman 2000). Annual reports have been used as the source of environmental disclosure information with or without the inclusion of other documents (see for example Al-Tuwaijri, Christensen & Hughes II 2004; Deegan, Rankin & Tobin 2002; Deegan, Rankin & Voght 2000; Hai, Foo, Tan & Yap 1998; Deegan & Gordon 1996; Deegan & Rankin 1996; Gibson & Guthrie 1995; Patten 1992; Freedman & Wasley 1990; Guthrie & Parker 1989; Freedman & Jaggi 1988; Rockness 1985; Freedman & Jaggi 1982; Hogner 1982; Wiseman 1982; Ingram & Frazier 1980; Ingram 1978; Belkaoui 1976).

It is acknowledged that other disclosure instruments may be used by companies and that a minimal amount of a company's corporate social reporting may occur in published annual reports (Unerman 2000); however, the annual report has been considered a useful instrument for the dissemination of information to stakeholders (Zeghal & Ahmed 1990). Furthermore, attempting to capture all communications from an organisation in an extensive or non-exhaustive range of documents may be problematic (Zeghal & Ahmed 1990).

In addition to being a useful medium for the dissemination of information by the corporation, the annual report was noted in earlier research as a significant source of environmental information for users (Deegan & Rankin 1997; Tilt 1994). Deegan and Rankin (1997) surveyed users to determine whether they believed environmental information was material, if

[69] Regulated environmental reports to be provided with annual reports filed with the United States Securities and Exchange Commission.

they sought environmental information in annual reports and whether the annual report was the main information source for environmental information. A questionnaire was forwarded to shareholders, stockbrokers/research analysts, representatives of financial institutions, accounting academics, and organisations that perform a review or oversight function. Overall, a significant proportion of respondents believed that environmental issues were material to decision-making. The strongest supporters of the materiality of environmental disclosures were organisations conducting a review function (83 per cent) followed by shareholders (72.4 per cent) and financial institutions (66.7 per cent) (Deegan & Rankin 1997, p. 573). A significant proportion of respondents indicated that they sought environmental information from annual reports with review organisations (83 per cent) and shareholders (73.3 per cent) again providing the greatest support (Deegan & Rankin 1997, p. 573). Furthermore, the respondents identified the annual report as the most significant *source* of environmental information. Other sources of environmental information, although significantly less favoured than the annual report, were the separate environmental report and media sources (Deegan & Rankin 1997).

Gray, Kouhy and Lavers (1995b, p. 82) provide an explanation for the popularity of the annual report as both an information source for stakeholders and as an instrument for management to communicate to stakeholders:

> The construction of the financial image of the organisation is critical in terms of how the organisation is seen and judged. The social and environmental factors frequently will produce conflicts with the financial ambitions of the organisation and its owners. The presentation, within the same document or reporting process, of the financial on the one hand and the social and environmental on the other, becomes an important element in demonstrating the extent (if at all) to which the organisation reconciles these matters.

Furthermore, the annual report has been the most frequently used medium in environmental disclosure research. For example, Unerman (2000, p. 668) showed that seventeen out of twenty-five studies examined used the annual report and accounts as the only documents analysed. In addition, s. 299(1)(f) of the Corporations Act requires disclosure relating to environmental regulation to be provided in the directors' report of the annual report. Consequently, the annual report was selected as the sole medium of environmental disclosures for this study. The use of annual reports also allows the results of this study to be comparable with previous research in the field.

4.4.2 Units of analysis

Content analysis is a process of turning the content of documents or other media into 'precise, objective, quantitative data' (Neuman 2000, p. 294). In order to quantify the content of documents, the researcher must develop a coding system and decide on the unit of measurement for the analysis (Krippendorff 1980).

First the researcher using content analysis must select the recording units to be coded in the analysis (Holsti 1969). The *recording unit* is that which identifies the themes of interest to the researcher. Second, the researcher must select the *unit of measurement* (or enumeration) with which to quantify the results.

Several researchers have discussed the advantages and disadvantages of using specific units for recording and measurement (Unerman 2000; Milne & Adler 1999; Hackston & Milne 1996; Gray, Kouhy & Lavers 1995b). Units included in content analysis techniques of social disclosures used and discussed in past studies include number of words (Deegan & Gordon 1996; Deegan & Rankin 1996; Zeghal & Ahmed 1990), number of sentences (Deegan, Rankin & Tobin 2002; Tilt 2001; Deegan, Rankin & Voght 2000; Hackston & Milne 1996; Ingram & Frazier 1980), number of pages (Cowen, Ferreri & Parker 1987), percentage of pages (Unerman 2000; Gray, Kouhy & Lavers 1995a; 1995b; Guthrie & Parker 1989) and percentage of total disclosure (Trotman & Bradley 1981).

As discussed above, Holsti (1969) makes a clear distinction between the selection of the initial recording unit and the unit of enumeration (measurement) used in the content analysis process; however, Milne and Adler (1999) note that many studies using content analysis fail to distinguish between the unit used in the identification and coding stage (the initial recording unit) and the unit used for the quantification of those disclosures (the unit of measurement)[70]. The researcher should select a recording and/or measurement unit consistent with the underlying objectives of the content analysis. For example, words can be the most reliable unit of measurement for a researcher seeking the *frequency* with which a company uses the word "environment" in an annual report (Neuman 2000; Milne & Adler 1999);

[70] This was further identified during the literature review of this thesis. Not only do a number of authors fail to distinguish between recording and measurement units, it was also identified that the terminology is often used interchangeably.

however, if the researcher is using a content analysis technique to determine the underlying themes or direction of disclosures, attention must be paid to the *meaning* of the disclosures. Hence, for the purposes of this research, consideration was given to the most appropriate recording unit for the identification of themes and nature of disclosure, and the most appropriate measurement unit for quantifying disclosure.

Sentences have been proposed as the preferred recording unit in content analysis by several authors (Milne & Adler 1999; Hackston & Milne 1996; Ingram & Frazier 1980). Ingram and Frazier (1980) used sentences as the recording (and measurement) unit arguing that 'a sentence is easily identified, is less subject to interjudge variation than phrases, clauses, or themes, and has been evaluated as an appropriate unit in previous research' (p. 617). Hackston and Milne (1996) suggested that agreement between coders should be higher when using sentences as perceptions of the meaning of words may differ between coders. Based on such arguments it is suggested that it is best to use sentences as the recording unit (Milne & Adler 1999). Consequently, sentences were adopted as the *recording unit* in identifying themes and nature of disclosure for this research.

As discussed above, an important assumption of environmental disclosure research using content analysis is that the quantity of disclosures on a particular theme or event is representative of the importance of that theme or event (Unerman 2000; Gray, Kouhy & Lavers 1995b; Krippendorff 1980). Unerman (2000) argues that percentage or proportion of a page is the most appropriate unit of measurement for content analysis. He argues that the use of words and sentences excludes important information contained within photographs, graphs or charts. It is also suggested that font size and typeface can be an indicator of the importance of an issue. Considering the assumption that the amount of disclosure signifies the level of importance of an event or theme, he suggests that using measures such as words or sentences that ignore certain disclosures violates this assumption. Gray, Kouhy and Lavers (1995b) suggest that the use of pages as the unit of measurement is easier, and consequently, yields greater reliability. They acknowledge, however, that in some circumstances the use of page measurements may result in decreased validity due to the loss of detail from using this measure[71].

[71] Furthermore, the use of the Connect4 database in this research, which reduces the annual report to a standardised Microsoft Word document for the 1997 – 2000 years, removes graphical images including pictures, photographs and other formatting from the analysis.

Milne and Adler (1999) suggest that sentences should be the preferred unit of measurement in content analysis. They argue that quantification errors are less likely to occur when using sentences as the number of words in a document is greater than the number of sentences (Milne & Adler 1999); however, Deegan and Gordon (1996) argue that words provide better detail than sentences when measuring the actual volume of disclosures.

The number of words has been used as the unit of measurement in several studies (Deegan & Gordon 1996; Deegan & Rankin 1996; Zeghal & Ahmed 1990). The use of words has been criticised as decreasing reliability and providing meaningless results or measures, particularly during the coding stage (Milne & Adler 1999); however, the effect on reliability is dependent upon the objectives of the research and the content analysis technique adopted. Krippendorff (1980, p. 61) explains that words are a 'syntactical unit' and subjectivity in determining their meaning is not required. Also, words are the smallest and therefore the safest unit for quantification purposes in written documents (Krippendorff 1980). Therefore, while sentences were adopted as the recording unit, the *unit of measurement* for this research was number of words.

Once the recording and measurement units were defined, the information provided in the annual reports of the twenty-five sample companies was examined to ascertain the theme, nature and quantity of environmental disclosures. This integrated approach is adopted from the methods in previous empirical studies into social and environmental disclosures involving analysis of annual report and accounts information (Deegan & Gordon 1996; Deegan & Rankin 1996; Gibson & Guthrie 1995; Patten 1992; Freedman & Wasley 1990; Guthrie & Parker 1989; Freedman & Jaggi 1982; Hogner 1982; Wiseman 1982; Ingram & Frazier 1980; Ingram 1978). Milne and Adler (1999) suggest that the use of categories that include the dimensions of evidence and news potentially increases the understanding of disclosure practices.

Firstly, *themes* were identified from the annual reports based on the propositions outlined in chapter 3. The major theme categories included primary and sub-category themes being:

- total voluntary environmental disclosures, including;

  voluntary emission disclosures; and

  - voluntary NPI disclosures.

- mandatory environmental disclosures.

Mandatory environmental disclosures (P3a and P3b) were those presented in the directors' report in compliance with the requirements of s. 299(1)(f) of the Corporations Act. Voluntary environmental disclosures were identified as those environmental disclosures not appearing in the directors' report. While several authors provide definitions of the nature of environmental disclosures (Brown & Deegan 1998; Deegan & Gordon 1996; Deegan & Rankin 1996), there are few authors who provide a definition of an "environmental" disclosure.

Hackston and Milne (1996), Deegan, Rankin and Tobin (2002) and Patten (2002b) did provide an explanation of disclosure categories used to determine environmental performance, including environmental pollution. Patten's categories were outlined earlier in this chapter and were particular to US disclosure requirements. Hackston and Milne (1996), in a New Zealand study, provided a detailed checklist of environmental disclosures. Deegan, Rankin and Tobin (2002) also adopted the Hackston and Milne (1996) guidelines in an Australian study which distinguished both environmental performance and pollution categories. Consequently, the Hackston and Milne guidelines were considered most relevant to the requirements of this research. The pollution categories formed the basis to identify voluntary emission disclosures for P1c and P2b. Therefore, voluntary emission disclosures were identified as those not appearing in the directors' report[72] or the corporate governance statement as per the requirements of Australian Stock Exchange (ASX) Listing Rule 4.10.3[73] and meeting the following criteria:

- pollution control in the conduct of the business operations; capital, operating and research and development expenditures for pollution abatement;
- statements indicating that the company's operations are non-polluting or that they are in compliance with pollution laws and regulations (including the NPI);

[72] See Divisions 1 and 2 of Part 2M.3 of the Corporations Act re requirements on directors' report. Also see section 2.8 for details on regulatory environmental disclosure requirements per s. 299(1)(f). It should be noted that corporations may also provide voluntary information in the statutory sections of the annual report; however, to determine what is voluntary and what is statutory disclosure in the statutory section requires a detailed knowledge of *all* statutory reporting requirements that a corporation is subject to and the corporation's actual performance in relation to such reporting requirements. This was considered beyond the scope of this thesis and, consequently, no attempt was made to identify voluntary disclosures which may appear in the statutory sections of the annual report.

[73] The ASX released Listing Rule 4.10.3 in 1995 which required the inclusion of a separate section on corporate governance issues to be included in the annual report as of the 30 June 1996. Listing Rule 4.10.3 was superseded by new requirements effective 1 January 2003.

- statements indicating that pollution from operations has been or will be reduced;
- prevention or repair to the environment resulting from pollution, emissions to land, air or water;
- conservation of natural resources such as recycling glass, metals, oil, water and paper;
- using recycled materials;
- efficiently using materials resources in the manufacturing process;
- supporting anti-litter campaigns;
- preventing waste.

Voluntary NPI disclosures (P2a) were specific to this study and were identified as those voluntary disclosures:

- directly mentioning or discussing the NPI;
- providing discussion directly relating to the NPI such as future or current compliance with the NPI.

Total voluntary environmental disclosures (P1a and P1b) comprised the voluntary emission disclosure categories in addition to the following categories derived from Hackston and Milne (1996):

- statements relating to compliance with environmental regulations;
- prevention of damage to the environment or repair of subsequent damage;
- awards relating to environmental performance;
- contributions to environmentally related organisations;
- discussion of wildlife conservation;
- discussion of environmental impact studies;
- training of employees in relation to environmental management.

An additional category was included for a statement or discussion of environmental policy (Patten 2002b).

Sections relating to the themes were colour-highlighted on electronic copies of the annual reports during the coding process to permit easy identification during the quantification process[74]. The annual reports were then re-searched and re-read to ensure that all environmental disclosures were captured during the earlier search procedures.

The theme categories were further classified according to the *nature* of the disclosure; that is, whether the disclosure was negative, neutral or positive in its reflection of the organisation's approach to environmental issues (P1b and P3b). The adoption of the positive/negative, and good news/bad news category has been used by several researchers (Gray, Kouhy & Lavers 1995b; Hogner 1982) and particularly in Australian studies (Brown & Deegan 1998; Deegan & Gordon 1996; Deegan & Rankin 1996; Guthrie & Parker 1989). Deegan, Rankin and Tobin (2002) also include a neutral category in circumstances where it cannot be determined whether the disclosure is positive or negative.

Brown and Deegan (1998) and Deegan, Rankin and Tobin (2002) categorise the nature of disclosures in accordance with the information the social or environmental disclosure refers to and whether the information has a positive/beneficial, negative/deleterious impact upon society. That is, positive, negative or neutral refers to the nature of the activity discussed and its impact on society. Alternatively, Deegan and Gordon (1996) categorise the disclosure according to whether the disclosure presents the company 'as operating in harmony with the environment' or 'as operating to the detriment of the natural environment' (Deegan & Gordon 1996, p. 189). This approach does not require an analysis of whether the type of issues being discussed are positive or negative, but rather the way the corporation portrays itself to users of the annual report. The Deegan, Rankin and Tobin (2002) approach is adopted for this study. Therefore, the categories for nature of disclosure were:

- Positive: provides information about environmental activities which have a positive or beneficial impact on society;
- Negative: provides information about environmental activities which have a negative or detrimental impact on society;

[74] Two coders were employed in this research. The author was the principal coder. The second coder was a Professor in Accounting.

- Neutral: provides information about environmental activities which cannot be determined as having either a positive or negative impact on society.

This approach is considered useful as companies may attempt to "gloss over" events that are negative and attempt to make those events appear minimal or even favourable to readers (Rockness 1985).

Initially, the principal coder undertook test codes on sample annual reports to develop the coding instrument. This process was repeated to refine the instrument and identify ambiguity during the process. As sentences were defined as the recording unit, it was identified during the instrument refinement process that several companies disclosed both negative and positive information in the same sentence. This phenomenon led to a fourth classification of positive/negative being included in the worksheet.

Although an increase in the number of categories used in content analysis may also increase subjectivity and reduce reliability, it also provides the researcher with greater detail on the content of the material (Krippendorff 1980). Therefore, greater detail was considered necessary to permit a more accurate representation of disclosure practices, following the implementation of the NPI and the introduction of the mandatory environmental disclosure requirement of s. 299(1)(f).

4.4.3 Reliability in content analysis

In general, reliability is 'the degree to which measures are free from error and therefore yield consistent results' (Zikmund 1997). It is necessary to ascertain the reliability of data collected using content analysis to ensure that results may be replicated and any inferences drawn from the results are valid (Milne & Adler 1999; Krippendorff 1980). As Krippendorff explains (1980, p. 21):

> Any instrument of science is expected to be reliable. More specifically, when other researchers, at different points in time and perhaps under different circumstances, apply the same technique to the same data, the results must be the same. This is the requirement of a content analysis to be replicable.

Holsti (1969, p. 142) argues that a researcher using content analysis may need to determine a 'balance between reliability and relevance of categories and units; the co-efficient of reliability cannot be the sole criterion for making such decisions'. Krippendorff (1980) describes three types of reliability issues to be considered in content analysis — stability, reproducibility and accuracy. Each type differs in research design, the errors assessed and the strength as a reliability measure.

Stability is defined as 'the degree to which a process is invariant or unchanging over time' (Krippendorff 1980, p. 130). Stability, also referred to as 'intra-observer reliability', is the weakest of the reliability measures and is assessed in a test-retest design involving an individual coder (Neuman 2000). Krippendorff (1980) warns that stability should not be used as the only indicator of the reliability of a content analysis process.

Reproducibility reliability refers to the ability of different coders to reproduce the same results on the same data set (Krippendorff 1980). Reproducibility identifies both intra-observer inconsistencies and inter-observer disagreements in the content analysis process. Reproducibility is evaluated using a test-test design and provides a higher level of reliability than stability. For the analysis to have reproducibility the coders must be independent (Krippendorff 1980).

The strongest type of reliability test is accuracy (Krippendorff 1980). Accuracy requires the comparison of coder performance or the instrument against a predetermined standard that should represent the expected correct performance. Consequently, the accuracy test of reliability assesses 'intra-observer inconsistencies, inter-observer disagreements, and systematic deviations from the standard' (Krippendorff 1980, p. 131).

Holsti (1969) suggests several approaches for increasing reliability in category-based content analysis. First, the researcher can rigidly define the content analysis categories using exhaustive definitions; however, this effectively narrows the method to be a simple search for specific words and symbols. Second, he suggests (1969, p. 137) that 'requiring judges to make fine discriminations between subcategories often results in a high incidence of disagreement'. In such circumstances Holsti suggests that if the distinctions between the subcategories 'are not of major theoretical significance' the aggregation of some subcategories may increase reliability. Thirdly, the use of dichotomous decision methods and more than one coder increases reliability.

To enhance the reliability of the coding instrument, a second coder was employed to independently undertake a proportion of the content analysis task, with a view to later examining the amount of inter-coder agreement. Consequently, reproducibility was targeted as the required level of reliability. Initially, the two coders coded the annual reports from 1997 to 2000 of four of the sample companies (a total of sixteen test-coded annual reports) separately. Following the initial sample coding the coders discussed any differences in coding results. The coding instrument and instructions were refined until a high level of agreement was achieved[75]. This approach is a better indication of the reliability of the data than a pre-test/post-test as 'it is sensitive to more than the internal noise or inconsistencies of one coder' (Krippendorff 1980, p. 130).

Milne and Adler (1999) reported inconsistencies in both the methodologies used by researchers to determine the level of reliability in content analyses and the reporting of reliability issues when discussing empirical research. The degree to which reliability issues have been considered in the literature is varied. For example, Gray, Kouhy and Lavers (1995b, p. 86) state that reliability was determined 'intuitively rather than claiming any statistical legitimation, to be within quite acceptable bounds'. While Gray, Kouhy and Lavers (1995b) discuss the instrument development process in detail, many early studies provide minimal information on issues to address reliability. Freedman and Jaggi (1982) do not provide any discourse addressing reliability. In a later study, Freedman and Wasley (1990) mention the use of multiple coders but again do not mention any issues regarding reliability or why multiple coders were used. Other authors mention the use of multiple coders to reduce 'arbitrariness' (Patten 1992, 1991; Wiseman 1982); however, the extent to which reliability measures are reported in some earlier studies is reflected in Patten (1991, p. 302) who states that 'the independent reviewer and myself addressed and reconciled any differences'. Deegan and Rankin (1996) and Deegan and Gordon (1996) discuss the limitations of content analysis being, primarily, the 'necessary element of subjectivity involved in determining what constitutes a particular type of disclosure' and that 'the significance of a disclosure can be meaningfully represented by the quantity of disclosures' (Deegan & Gordon 1996, p. 189). In contrast, Hackston and Milne (1996) discussed in detail issues relating to reliability and the use of statistical reliability measures including Scotts pi and Krippendorff's alpha. Milne and Adler's (1999) criticisms of researchers' failure to report on reliability issues and reliability measures in the literature have resulted in an increase in reliability measures being used and

[75] Further detail and reliability tests are presented later in this section.

discussed in research. Recent studies now report both issues relating to reliability in content analysis and the use of statistical measures of reliability (Deegan, Rankin & Tobin 2002; Tilt 2001).

There are several methods for determining the level of reliability in content analysis research (Milne & Adler 1999; Krippendorff 1980; Holsti 1969); however, no one method is declared as the perfect reliability measure for all situations. Milne and Adler (1999) argue that the researcher must consider the reliability measure most suited to the research.

Correlational coefficients are not considered useful measures of reliability as 'identical frequency tabulations do *not* necessarily indicate a high level of agreement' (Holsti 1969, p. 139). As such, while the coders may report similar numbers of sentences identified in each category, reliability coefficients do not report agreement on *individual* sentences within the document. It is therefore necessary that each coding decision by each coder for each sentence be identified. Milne and Adler (1999, p. 242) explain:

> [Calculation of] any of the measures of reliability requires the total number of coding decisions each coder makes, and the coding outcome of every one of those coding decisions be known. This applies not only to the sentences that each coder decides are social and environmental disclosures, but also to those that they decide are not social and environmental disclosures…Coding reliability requires that the same sentences are coded in the same way by each and every coder.

Two measures of reliability were utilised in this study – the coefficient of reliability and Scott's pi. Holsti describes the basic content analysis reliability coefficient as being (1969, p. 140) 'the ratio of coding agreements to the total number of coding decisions'. The formula is stated as follows:

$$\text{Coefficient of reliability} = 2M/(N1 + N2)$$

M is the number of coding decisions that the coders agree upon and N1 and N2 represent the total number of coding decisions made by each of the judges. Calculation of the coefficient of reliability for the sixteen[76] test-coded annual reports resulted in a result of 98.2 per cent agreement (rounded); however, this method does not take into account the number of coding

[76] Four companies with annual reports from each of the years 1997 to 2000 inclusive.

agreements occurring as a result of chance (Holsti 1969). Krippendorff (1980, p. 133) explains that:

> Reliability is expressed as a function of the agreement achieved among coders regarding the assignment of units to categories. If agreement among coders is not better than chance, which might be observed when coders do not care to examine the units or instead throw a die to decide on category assignments, reliability is absent. Whether reliability takes the form of stability, reproducibility, or accuracy, it always boils down to measuring the agreement achieved among observers, coders, or judges regarding how they independently process scientific information.

Holsti (1969) argues that as the number of categories in the analysis increases the possibility of agreement by chance alone decreases. Scott's pi corrects for both the number of categories used and the probable frequency that each category will be used. Scott's pi takes into account the possibility of chance and may be used for nominal, ordinal, interval or ratio scale data.

> Scott's pi = (% of observed agreement - % expected agreement)/(1 - % of expected agreement)

The percentage of observed agreement is equal to the coefficient of reliability. Expected agreement is equal to the sum of the squared proportions with which items are assigned to each category in the content analysis process. The average expected agreement of the two coders was calculated as 89.6 per cent rounded. Overall, 5885 sentences were coded from the sixteen test annual reports. The coders disagreed on the coding of 79 sentences and the inclusion of 27 sentences. Therefore, reliability using Scott's pi was calculated at 82.6 per cent above chance. Acceptable levels of reliability are considered to be 80 per cent above chance (Hackston & Milne 1996, p. 87).

4.5 Variable Measurement

Several variables were operationalised in this research to test the propositions identified in chapter 3. Descriptions of those variables are summarised in the following section.

4.5.1 Mandatory disclosures

Environmental disclosures appearing in the statutory directors' report of the annual report were classified as mandatory disclosures for the purposes of this study (descriptive statistics relating to P3a and P3b)[77]. That is, those in compliance with the requirements of section 299 (1)(f) of the Corporations Act which states that the company's directors' report for the financial year must:

> 'if the entity's operations are subject to any particular and significant environmental regulation under a law of the Commonwealth or of a State or Territory – give details of the entity's performance in relation to environmental regulation'

4.5.2 Voluntary environmental disclosures/voluntary emission disclosures/voluntary NPI Disclosures

For the purposes of this study (P1a, P1b, P1c, P2a, P2b, P3a and P3b), voluntary environmental/emission/NPI disclosures are those not appearing in the statutory directors' report as required by s. 299 (1)(f) of the Corporations Act and excepting those in the corporate governance statement as per the requirements of ASX Listing Rule 4.10.3. Ullmann (1985, p. 554) argues that 'differentiation is needed between mandated and voluntary social performance activities' to improve the methodological process in social performance, social disclosure and economic performance research; however, only a limited number of studies make this distinction. Wiseman (1982, p. 31) describes voluntary environmental disclosures as those existing in the absence of 'a measurement and reporting system to account for corporate environmental performance'.

Freedman and Wasley (1990) examined both voluntary and mandatory environmental disclosures. They suggest that disclosures in 10k reports are mandatory being regulated by the SEC. On the other hand, they classify disclosures in company annual reports as being

[77] It should be noted that corporations may also provide voluntary environmental disclosures in the directors' report; however, to determine what is voluntary and what is statutory disclosure pertaining to s. 299(1)(f) requires a detailed knowledge of actual performance in relation to the reporting requirement, and the corporation's interpretation of the section. This was considered beyond the scope of this thesis and, consequently, no attempt was made to identify voluntary disclosures which may appear in the statutory sections of the annual report.

voluntary (that is, unregulated). In an Australian study, prior to the amendment of the Corporations Law to include s. 299(1)(f), Deegan and Gordon (1996) described environmental disclosures as voluntary in the absence of mandatory or professional requirements for firms to disclose environmental initiatives. Therefore, the voluntary environmental disclosure variable was operationalised in a manner consistent with descriptions provided by Wiseman (1982), Freedman and Wasley (1990), and Deegan and Gordon (1996).

4.5.3 Information content of NPI/pollution emission disclosures

It is acknowledged that quantity of disclosures is a measure of the importance of an issue to an organisation (Krippendorff 1980). Consequently, several researchers have used changes in the quantity of environmental disclosures over a given period as being representative of the desire of corporations to legitimate environmental performance to users of the annual report (Brown & Deegan 1998; Deegan & Rankin 1996; Patten 1992). It may be argued, however, that a change in the quantity of environmental disclosures alone may not be the only indication of a phenomenon that a corporation perceives to be a threat to legitimacy. For the purposes of this study, it was also considered necessary to examine the information content of disclosures relating both directly and/or indirectly to the expected legitimacy threat, that is, the NPI. While the more detailed content analysis technique described above forms a major analysis of this study, a nominal yes/no measure was also used to identify the existence of particular disclosures in the annual report (P2b and descriptive purposes). These included:

- discuss/mention emissions for each year;
- provide a table of emissions for each year;
- mention the NPI for each year;
- describe the NPI for each year;
- mention NPI available on the web for each year;
- state URL of the NPI for each year.

4.5.4 NPI pollution emission quantities

Early empirical studies utilised pollution performance rankings provided by the Council on Economic Priorities (Freedman & Wasley 1990; Freedman & Jaggi 1982; Wiseman 1982; Ingram & Frazier 1980) obtaining inconsistent results.

Ullmann (1985, p. 555) suggested the use of 'physical pollution data filed with EPA' as a methodological improvement for studies examining corporate social performance. Patten (2002b, p. 766) operationalised environmental performance using the United States Toxic Release Inventory (TRI) data. He argues that TRI data provides more meaningful results as:

1. it represents reported emissions of chemicals by the corporations themselves;
2. the same/similar measures are required for all TRI reporting entities; and
3. it allows access to a diverse sample of firms.

For the purposes of this research, consideration was initially given to a measure in which the quantities of reportable substances were adjusted using the NPI substance rating system to represent the health and environmental impact of each. Operationalisation of the variable in this manner was determined to be inappropriate, however, based on four factors.

First, the substance rating system adopted by the NPI was not considered to be a precise indicator of the substances potential hazardous effects. The NPI utilised a rating system in which substances were scored based on human health, environment and exposure effects, with each provided a score ranging from zero to three with zero being lowest toxicity and three being highest toxicity. The health and environment scores were summed and then multiplied by the exposure effect score to determine an overall NPI risk score (NEPC 1999, p. 24). The NEPC (1999, p. 5) warned that 'the risks posed by particular substances to health and environment are extremely complex phenomena, difficult to characterise with any real accuracy in a simple uni-dimensional measure, and because of this the scores must be regarded as being orders of magnitude, or at best as being semi-quantitative'. They further warn that the scores were rounded to a single decimal place 'in order not to give an impression of precision which would belie the semi-quantitative nature of the scoring and combining process' (1999, p. 24).

Second, the NPI is considered to be, primarily, a provider of *quantity* of emissions. As explained by Sullivan (1999, pp. 368-369):

> It is important to recognise that the NPI is an emissions database, not an environmental or public health effects database (nor was it ever intended that this be the case). That is, the primary purpose of the NPI is to provide information on the quantities of pollutants emitted to the environment. The provision of information on quantities released to the environment does not provide a complete characterisation of the effects of the substances released or the consequences of variations in emissions (for example, peak versus average values).

Third, the limitation of the NPI to provide an accurate context for the emissions data was an initial concern by companies that feared 'the public will use the information irresponsibly' (Fayers 1998, p. 80). This issue was restated in submissions to the 2002 NEPC review of the NPI in which industry expressed concerns that the quantities of emissions reported on the database were not being presented with sufficient contextual data to allow their emissions to be 'seen in the broader environmental context' (NEPC 2002, p. 13).

Problems with the interpretation of the emission information (that is, in linking the quantitative with the contextual information) were also identified by Howes (2001). Howes conducted a survey and focus group study of 33 second-year university students enrolled in an environmental policy program to determine their response to, and ability to use, the NPI and TRI. In asking subjects to rate the NPI website on its 'provision of adequate information for interpreting the numbers in the emission reports' (Howes 2001, p. 540), it was found that while 22 per cent believed that the TRI provided sufficient contextual information only 3 per cent suggested that the NPI did so, with 67 per cent disagreeing that this information was adequate on the NPI (Howes 2001, p. 546). This was further identified in focus groups in which (Howes 2001, p. 547):

> One of the major concerns expressed in both the surveys and focus groups was that it was very difficult to relate the figures available to actual on-the-ground exposure. Further, respondents found it impossible to get a clear understanding of the health risk entailed in living in an area.

Therefore while subjects in the study were able to easily access and view quantities of emissions, there was limited understanding of the contextual information provided on the NPI in relation to the environmental impact of same.

Fourth, it should be noted that the final list of 90 reportable substances (and then 36 substances for the initial three reporting periods including those considered in this research) was determined from approximately 400 substances based on those with the greatest NPI risk score. Hence the list of 36 substances on which the NPI emission quantity variable is operationalised represents those which are considered to be of the highest NPI risk score, with minimal differences between toxicity ratings, and were stated to be 'almost all substances about which there have been major concerns in recent years' (NEPC 1999, p. 25).

Finally, as discussed in section 3.5, societal expectations of corporate behaviour, as embodied in the social contract, are both implicit and explicit (Deegan 2006). Howes (2001, p. 530) states, in relation to the emissions published on the NPI, that corporations 'may legally use and release these chemicals' and that 'the only sanction available under such programs is the adverse reaction of the public'. Therefore, while it remains legal for corporations to release emissions, the NPI's objective is to encourage corporations to reduce emissions through publication of the types and amounts of emissions being released and a potential or actual threat of subsequent community pressure (Howes 2001; Hill 2000).

Consequently, this thesis argues that the greater the quantity of pollution emissions disclosed on the public database, the greater the public perception of the company as a poorer environmental performer to the user of the database (see for example discussion on Patten 2002b, chapter 2). Taking this and the four factors discussed above into consideration, operationalisation of the variable was based upon the method adopted by Patten (2002b, p. 769) who operationalised environmental performance as 'the company-specific amount of toxics released into the environment, as reported in the 1988 TRI listing of the top 500 companies, divided by the company's 1988 revenue level'. This study does not, however, propose that the quantity of emissions is an accurate measure or representation of environmental performance and operationalisation of the emissions variable as a simple quantification of emissions is acknowledged as a limitation of this research.

The summarised NPI databases for the 1998/1999 and 1999/2000 reporting years were reduced to include only those pollution emissions from the sample companies and their

controlled entities. The emissions for the parent entity and its controlled entities were summed to provide a single pollution emission quantity in kilograms per company. Consistent with Patten (2002b) the total emission data for each company was used in this research. The pollution emission data disclosed on the NPI is collected and reported to the reporting jurisdiction[78] by the company. Also, data in the first three years of reporting was expected to be incomplete to allow for adoption of the NPI process in the implementation period. These limitations are also recognised in this study.

The original databases obtained from the NPI for 1998/1999 and 1999/2000 contained 9769 and 19988 lines of data respectively (Environment Australia 2000). The data was received from 1200 facilities in 1998/1999 and 1937 facilities in 1999/2000 (Hill 2001). To ensure a useful representation of the corporations' total emissions on the NPI, emissions from controlled entities of the sample corporations were included in the parent entity's total emissions. Controlled entities were identified from the notes to the financial statements in the companies' annual reports for the financial years 1999 and 2000. The complete lists of controlled entities obtained from the annual reports were copied into a single word processing document for each of the years 1999 and 2000. The controlled entities were then cross-referenced with all entities appearing on the NPI databases for the corresponding year using the Excel 'find' function. Where there was uncertainty caused by minor differences in names provided on the NPI and those of the controlled entities, the entire annual report was searched for reference to the uncertain relationship. This was a particular problem in the 1998/1999 NPI reporting year as data was incomplete (Environment Australia 2000) and facility names were sometimes provided instead of the facility's registered names. Where uncertainty still remained company websites were examined, or the company was contacted for confirmation of the relationship.

An additional column was added to the NPI database in which the parent entity of the cross-referenced controlled entity was recorded when a match was identified. Entities that were not identified as the sample corporations or controlled entities of those corporations were subsequently removed from the NPI database.

[78] The reporting jurisdiction is the relevant State, Territory or Commonwealth environmental protection authority.

In order to ensure comparability with the research undertaken by Patten (2002b), an additional variable was computed which adjusted the NPI pollution emission quantities for firm size. Patten (2002a, p. 164)[79] explains:

> …because larger firms, ceteris paribus, would be expected to have larger amounts of pollutants released than smaller firms, it is necessary to adjust the TRI release amounts for firm size to obtain a meaningful measure of pollution performance.

Therefore, consistent with Patten's (2002a, 2002b) method, firm size was measured according to annual sales revenue levels. During the analyses, size-adjusted NPI pollution emission quantities were used.

4.5.5 Reported non-compliance with environmental regulations

Propositions 3a and 3b required the determination of sample corporations reporting compliance or non-compliance with environmental regulations pursuant to s. 299(1)(f). Therefore, mandatory environmental disclosures were reviewed for statements regarding either compliance or non-compliance with environmental regulations in the directors' report[80]. A nominal yes/no variable was developed[81].

4.6 Statistical Analyses

The determination of the correct statistical test to be undertaken in a given situation is determined by a number of factors, primarily the scale of measurement and normality of the data to be analysed (Zikmund 1997). Parametric statistics are appropriate where interval or ratio scaled data is used and data is normally distributed (Bluman 2001). Furthermore parametric tests of significance are not as reliable where the sample size is less than thirty (Hair, Anderson, Tatham & Black 1998, p. 73). In contrast, the use of non-parametric

[79] Patten (2002a) and (2002b) used the same TRI data.

[80] It was beyond the scope of this thesis to determine if the individual company's disclosures relating to compliance/non-compliance with environmental regulations were factual. See for example discussion in 3.8 regarding Australian Conservation Foundation complaint to ASIC regarding possible breaches of s. 299(1)(f) requirements by ERA Limited.

[81] In addition, for descriptive purposes, the voluntary environmental disclosures were also reviewed to identify those corporations reporting non-compliance with environmental regulation in the voluntary section.

statistics is appropriate where data are measured on a nominal or ordinal scale, or for ratio or interval scaled data, where the assumption of normality is not assumed (Zikmund 1997). Several variables used in the analysis in this research were measured on a nominal scale being the 'reported non-compliance with environmental regulation' variables for each of the years 1998, 1999 and 2000, and 'discuss/mention emissions' variables for the years 1997 through 2000 inclusive. The remainder of the variables in the analyses were ratio scaled.

Probability plots suggested that the ratio scaled data was not normally distributed so formal tests of normality were required[82]. The most commonly used formal tests of normality are the Kolmogorov-Smirnov statistic and the Shapiro-Wilks test (Hair, Anderson, Tatham & Black 1998). The Shapiro-Wilks test is preferred where the sample size is less than thirty (Coakes & Steed 1999) and was used to ascertain the normality or otherwise of the ratio scaled variables in the study[83]. As shown in Appendix E all of the ratio scaled variables used in the analyses in this study violate the assumption of normality ($p < .05$).

While it has been argued that some parametric tests are robust to violations of normality (Bryman & Cramer 1997), it is generally suggested that non-parametric tests be used when the sample size is not large and/or the scores are not normally distributed (Pagano 2001; Zikmund 1997). Consequently, this study used non-parametric tests or distribution-free tests that make 'no assumptions about the specific shape of the population from which a sample is drawn' (Weiers 1998, p. 543).

Correlation analysis is used to determine the direction, strength and significance of a relationship between two variables (Sekaran 1992). The characteristics of relationships between the quantity of voluntary environmental disclosure variable and the level of size-adjusted NPI emissions (P1a), the quantity of positive voluntary environmental disclosure variable and the level of size-adjusted NPI emissions (P1b), and the quantity of voluntary emission disclosure variable and the level of size-adjusted NPI emissions (P1c), were tested using the Spearman coefficient of rank correlation (Spearman rho). The Spearman rho is a non-parametric statistical test used to measure the strength and direction of a relationship between two variables at least of the ordinal scale (Weiers 1998).

[82] See Appendix D.

[83] Normality test statistics are displayed in Appendix E.

The Friedman two-way analysis of variance test is a non-parametric test that may be used as an alternative to the repeated measures analysis of variance test (ANOVA) where the data in the analysis are not normally distributed with equal variances (Weiers 1998). Unlike the ANOVA, which is concerned with means, the Friedman test uses the median (Weiers 1998). The Friedman test 'ranks the scores for each of the cases and then calculates the mean rank score for each sample' (Bryman & Cramer 1997, p. 139). The Friedman test was used to test proposition 2a.

The Cochran Q test was used for testing proposition 2b. The Cochran Q is a non-parametric test used where there are more than two related samples and when variables are measured on a nominal scale (Sekaran 1992).

Propositions 3a and 3b were tested using the Mann-Whitney U test. While the Kilmogorov-Smirnov statistic is more powerful than the Mann-Whitney test (Sekaran 1992), the number of cases (those reporting non-compliance versus those reporting compliance with environmental regulations) in the analyses were insufficient and the latter test was required.

4.7 Chapter Summary

This chapter outlined the research design used to test the propositions developed in chapters 2 and 3. A purposive sampling technique was adopted and the sample comprised twenty-five Australian corporations (and their associated controlled entities) appearing on the National Pollutant Inventory of 1999/2000 and appearing on the Connect4 database for the years 1997 to 2000 inclusive. In reference to the objectives of the NPI discussed in chapter 2, it was proposed that corporations with emissions published on the National Pollutant Inventory may face a potential legitimacy threat from their relevant publics. These entities would also be subject to the requirements of s. 299(1)(f).

A content analysis of annual reports for the period 1997 to 2000 inclusive was undertaken. Annual reports were selected as the disclosure medium to provide consistency and comparability with previous research, in particular Australian research (Deegan, Rankin & Tobin 2002; Deegan & Gordon 1996; Deegan & Rankin 1996; Gibson & Guthrie 1995; Guthrie & Parker 1989). Furthermore, the annual report is considered an important source of

environmental information (Deegan & Rankin 1997; Tilt 1994) and is the medium in which disclosures pertaining to s. 299(1)(f) of the Corporations Act are disclosed.

Sentences were used as the recording unit in the content analysis process to determine and maintain meaning as suggested by Milne and Adler (1999). Words were used as the unit of measurement as it has been argued that words provide better detail when measuring the volume of disclosure (Deegan & Gordon 1996; Krippendorff 1980).

Disclosures were distinguished as voluntary and mandatory environmental disclosures in accordance with the disclosure requirements in the Corporations Act 2001. Mandatory disclosures are defined as environmental disclosures in the directors' report pertaining to s. 299(1)(f). Voluntary disclosures are those not required by regulation or legislation and exclude those appearing in the corporate governance section of the annual report per the requirements of (now superseded) Listing Rule 4.10.3. Voluntary environmental disclosures were inclusive of the sub-categories voluntary pollution emission disclosures and voluntary NPI disclosures (P1a, P1b, P1c and P2a). Nominal variables were also used for the identification of particular themes and details relating to pollution emissions and the NPI for proposition 2b.

NPI emission quantities were determined from the details provided on the NPI databases for the 1998/1999 and 1999/2000 NPI reporting years. The data was reduced to include only those corporations that are listed entities and had annual reports on the Connect4 database for the years 1997 through 2000 inclusive. In order to capture all emissions of a particular entity, controlled entities were identified and emissions of the parent and controlled entity summed. In order to allow comparison with the work by Patten (2002a, 2002b), the emission quantities were adjusted for firm size. Also consistent with Patten, sales revenue was used as the proxy for firm size.

In order to test propositions 3a and 3b, a nominal variable was developed to identify companies reporting non-compliance or compliance with environmental regulation pursuant to the requirements of s. 299(1)(f). The location of the non-compliance disclosure was also noted for descriptive purposes; that is whether it was disclosed in the voluntary or mandatory section of the annual report.

Several statistical tests were used in the research. As the majority of the variables violated the assumption of normality, and the sample size was relatively small, non-parametric statistics were necessary. Consequently, techniques used in the analyses of the propositions and the descriptive analyses included Spearman rho, Friedman tests, Cochran Q and Mann-Whitney U tests.

The following chapter provides the data analysis, results and discussion relating to the research objectives and propositions outlined in chapter 3 using the method outlined in this chapter. Chapter 5 proceeds with a descriptive analysis of the companies included in the sample. The research propositions are then tested with descriptive analysis and discussion accompanying the presentation of results for each proposition. Chapter 5 concludes with discussion of the research findings.

Chapter 5

DATA ANALYSIS, RESULTS AND DISCUSSION

5.1 Introduction

The purpose of this chapter is to present and discuss the results of addressing the objectives of this thesis outlined in chapter 3.

First, to examine the potentially legitimising (and discretionary) nature of voluntary environmental disclosures by determining whether:

a. a change in environmental regulation acts as an impetus to changes in voluntary environmental disclosure practices in annual reports of Australian companies.

And, for comparison with previous research, principally that undertaken by Patten (2002b), if:

b. there is a relationship between the level of published pollution emissions on the NPI and the quantity of voluntary environmental disclosure in annual reports of Australian corporations.

Second, to examine, following the introduction of s. 299(1)(f) of the Corporations Act, whether:

c. there are significant differences between environmental disclosure practices in the voluntary sections of Australian corporate annual reports for corporations reporting non-compliance, and those not reporting non-compliance, with environmental regulations in the directors' report pursuant to the requirements of section 299(1)(f).

The chapter proceeds with a brief descriptive discussion of the size of the sample corporations, determined by sales revenue, during the study period. Analysis of the research propositions relating to the NPI and s. 299(1)(f) respectively is then provided with a summary of results concluding each section. The chapter concludes with a detailed discussion of the research findings.

5.2 Size of Sample Corporations

As discussed in chapter 4, the sample comprised twenty-five corporations from a diverse range of industries reporting on the NPI in the 1999/2000 reporting year. Seventeen of the sample corporations also reported on the NPI database in the 1998/1999 reporting year, which was the first NPI reporting year. As discussed in 4.5.4, consistent with the method adopted by Patten (2002a, 2002b) sales revenue is used to size-adjust the NPI emissions for propositions 1a, 1b and 1c. The sales revenue of the sample corporations for the years 1998 to 2000 is displayed in Table 10 which demonstrates variations in revenue levels both within and between the sample corporations.

Table 10: Sales revenue for sample corporations 1998 – 2000

Company ID	*Sales revenue 1998 '000 $*	*Sales revenue 1999 '000 $*	*Sales revenue 2000 '000 $*
AMC	6 056 100	6 048 800	5 737 200
ANE	221 873	221 081	238 864
APY	219 339	229 692	199 352
BRL	463 624	515 430	627 434
CAA	750 110	743 430	768 131
CNG	61 649	62 484	61 199
CPB	174 920	271 736	198 755
CSL	353 491	413 471	450 598
CSR	6 334 800	6 506 800	6 419 000
CTR	101 094	115 622	165 141
EML	2 331 894	2 233 300	2 102 400
GNS	97 005	101 377	151 741
HIL	348 761	377 783	435 399
ICT	954 673	1 002 574	949 111
NCM	256 499	457 369	697 487
NDY	1 483 800	1 356 100	1 323 600
NFD	1 082 564	1 123 858	1 096 870
OCA	57 988	51 451	74 250
PDP	5 983 500	5 680 000	5 725 800
RSG	201 052	148 255	186 220
STO	769 400	944 500	1 497 100
WEG	1 357 553	1 403 517	1 556 174
WJM	209 358	198 681	203 897
WMT	82 794	329 607	359 685
WOW	16 841 900	18 465 100	20 019 900

A summary of the minimum and maximum sales revenues between the sample corporations is displayed in Table 11. Indicative of the need to size-adjust emission quantities suggested by Patten (2002a, 2002b), the minimum and maximum sales revenues in 1998 were $57.988 million and $16 841.9 million respectively; in 1999, $51.451 million and $18 465.1 million; and, in 2000, $61.199 million and $20 019.9 million.

Table 11: Minimum and maximum consolidated entity sales revenue for sample corporations 1998 – 2000

	Minimum '000 $	*Maximum '000 $*
Sales revenue consolidated entity 1998	57 988	16 841 900
Sales revenue consolidated entity 1999	51 451	18 465 100
Sales revenue consolidated entity 2000	61 199	20 019 900

5.3 Proposition Testing

5.3.1 Results of the propositions relating to the NPI

P1a. Corporations with greater quantities of published pollution emissions, adjusted by size of corporation, on the National Pollutant Inventory have greater quantities of total voluntary environmental disclosures in annual reports.

As discussed in section 3.5.2 entities adopt a number of strategies depending upon whether they are attempting to gain, maintain or repair legitimacy. Those attempting to gain legitimacy may adopt proactive and intense tactics as it is assumed that management would have advance knowledge of a possible legitimacy threat (O'Donovan 2002). Ashforth and Gibbs (1990, p. 183) suggest that entities maintaining legitimacy will attempt 'to anticipate and prevent or forestall potential challenges to legitimacy'. In maintaining legitimacy an organisation will need, as part of the process, to possibly anticipate legitimacy threats (O'Donovan 2002; Suchman 1995). In contrast, it is suggested that those organisations attempting to repair legitimacy tend to do so as a reactive process (O'Donovan 2002).

Therefore, it may be argued that organisations will provide disclosures as a legitimating tactic in anticipation of and/or as a reaction to a potential legitimacy threat. Consequently, in testing propositions 1a, 1b and 1c, size-adjusted NPI emission levels were compared with the relevant annual report disclosures for both the year preceding the NPI reporting year (anticipatory disclosures) and the corresponding NPI reporting year (reactive disclosures).

The first NPI reporting year covered emissions for the period 1 July 1998 to 30 June 1999 and the second NPI reporting year covered emissions for the period 1 July 1999 to 30 June 2000. Consequently, for the purpose of this research correlation analysis was used to determine if there was a relationship between 1998/1999 NPI emissions and disclosures in the 1998 (anticipatory) and 1999 (reactive) annual reports, and between the 1999/2000 NPI emissions and disclosures in the 1999 (anticipatory) and 2000 (reactive) annual reports.

The mean and sum of words for voluntary environmental disclosures during the implementation period is displayed in Table 12. An increase in the quantity of voluntary

environmental disclosures in annual reports is noted during the test period[84]. The sample corporations included 7359 words in 1997, 6513 in 1998, followed by an increase in the number of words in 1999 and 2000 to 9555 and 10 630 words respectively. Mean words increased from 294.36 in 1997 to 425.2 in 2000.

Table 12: Mean and sum of words for voluntary environmental disclosures 1997 – 2000

Year of voluntary environmental disclosure	*Mean words*	*Sum words*
1997	294.36	7359.00
1998	260.52	6513.00
1999	382.20	9555.00
2000	425.20	10630.00

The non-parametric Spearman's rank-order (rho) correlation was used in testing proposition 1a as the variables were not normally distributed and therefore violated the assumptions of the Pearson product-moment correlation (Sheskin 2000). Table 13 displays the Spearman correlation coefficients for the size-adjusted 1998/1999 and 1999/2000 NPI emissions and the voluntary environmental disclosures from the preceding and corresponding years' annual reports.

Table 13: Spearman rho correlations between voluntary environmental disclosure words 1998 – 2000 and size-adjusted NPI emission levels for the 1998/1999 and 1999/2000 NPI reporting years

Disclosure Variable		*Size Adjusted NPI Emissions KG*	
		1998-1999	*1999–2000*
Voluntary environmental disclosure words 1998	Correlation co-efficient	.503*	N/A
	Sig. (1-tailed)	.020	
	N	17	
Voluntary environmental disclosure words 1999	Correlation co-efficient	.381	.568**
	Sig. (1-tailed)	.066	.002
	N	17	25

[84] Descriptive analyses presented with propositions 1a, 1b and 1c are inclusive of the 1997 reporting year in order to also provide supporting discussion for propositions 2a and 2b which consider the implementation period of the NPI being 1997 to 2000.

Voluntary environmental disclosure words 2000	Correlation co-efficient	N/A	.389*
	Sig. (1-tailed)		.027
	N		25

** Correlation is significant at the .01 level (one-tailed)
* Correlation is significant at the .05 level (one-tailed)

Overall, the results show significant positive correlations at both $p < .01$ and $p < .05$ between the size-adjusted NPI published emission levels 1998/1999 and the voluntary environmental disclosure words 1998 ($r = .503$; $p = .020$), and between the 1999/2000 NPI emissions and the voluntary environmental disclosure words for both 1999 ($r = .568$; $p = .002$) and 2000 ($r = .389$; $p = .027$).

Thus, the results of the correlation analysis indicate a predominantly positive relationship between *the quantities of published pollution emissions, adjusted by size of corporation, on the NPI and the quantity of total voluntary environmental disclosures in annual reports* as suggested in proposition 1a.

P1b. Corporations with greater quantities of published pollution emissions, adjusted by size of corporation, on the National Pollutant Inventory have greater quantities of positive voluntary environmental disclosures in annual reports.

While proposition 1a tested the quantity of voluntary environmental disclosures, this proposition tests the nature of voluntary environmental disclosures during the period.

Table 14 displays the mean voluntary environmental disclosure words, the mean positive voluntary environmental disclosure words and the mean proportion of positive voluntary environmental disclosure words for the years 1997 through 2000. Mean quantity of positive voluntary environmental disclosures were 269.64 words in 1997, reducing to 219.68 in 1998, and then increasing to 344.28 and 390.56 words in 1999 and 2000 respectively. The quantity of positive disclosures was greater than the negative, neutral and combined positive/negative disclosures in each year with positive proportion of voluntary environmental disclosure being .9425 in 1997, .8564 in 1998, .9068 in 1999 and .9332 in 2000.

Table 14: Mean voluntary environmental disclosure, mean positive voluntary environmental disclosure and mean proportions of positive voluntary environmental disclosures (words) 1997 – 2000

Disclosure year	*Mean total voluntary environmental disclosure words*	*Mean positive voluntary environmental disclosure words*	*Mean proportion of positive voluntary environmental disclosure words*
1997	294.36	269.64	.9425
1998	260.52	219.68	.8564
1999	382.20	344.28	.9068
2000	425.20	390.56	.9332

Table 15: Spearman rho correlation for positive voluntary environmental disclosure words 1998 to 2000 and size adjusted emission levels for the 1998/1999 and 1999/2000 NPI reporting years

Positive voluntary environmental disclosure variable in words by year		***Size Adjusted NPI Emissions KG***	
		1998–1999	***1999–2000***
1998	**Correlation co-efficient**	**.553***	
	Sig. (1-tailed)	**.011**	
	N	**17**	
1999	**Correlation co-efficient**	**.378**	**.577****
	Sig. (1-tailed)	**.067**	**.001**
	N	**17**	**25**
2000	**Correlation co-efficient**		**.388***
	Sig. (1-tailed)		**.028**
	N		**25**

** Correlation is significant at the .01 level (one-tailed)
* Correlation is significant at the .05 level (one-tailed)

Proposition 1b was examined by conducting a Spearman rho correlation between the size-adjusted NPI emission levels for 1998/1999 and 1999/2000 variables, and the positive voluntary environmental disclosure words variables for the years 1998 through 2000. Consistent with the findings relating to proposition 1a, the results (Table 15) show significant positive correlations at both $p < .01$ and $p < .05$ between the size-adjusted NPI published emission levels 1998/1999 and the positive voluntary environmental disclosure words 1998 ($r = .553$; $p = .011$), and between the 1999/2000 NPI emissions and the voluntary environmental disclosures words for both 1999 ($r = .577$; $p = .001$) and 2000 ($r = .388$; $p = .028$).

Therefore, the results of the correlation analysis indicate predominantly that c*orporations with greater quantities of published pollution emissions, adjusted by size of corporation, on the National Pollutant Inventory have greater quantities of positive voluntary environmental disclosures in annual reports* as suggested in proposition 1b.

P1c. Corporations with greater quantities of published pollution emissions, adjusted by size of corporation, on the National Pollutant Inventory have greater quantities of voluntary emission disclosures in annual reports.

Similar to proposition 1a, proposition 1c tests the quantity of disclosures made by the sample corporations; however, in contrast to proposition 1a which tested all voluntary environmental disclosures, this proposition considers voluntary *emission* disclosures only.

The mean and sum of words for voluntary emission disclosures for the years 1997 through 2000 are displayed in Table 16. Mean voluntary emission disclosure words ranged from 74.16 in 1997, 58.56 in 1998, and increasing to 69.68 and 90.08 in 1999 and 2000 respectively. The sum of words for the sample corporations increased from 1854 in 1997 to 2252 in 2000.

Table 16: Mean and sum of words for voluntary emission disclosures 1997 – 2000

Disclosure variable	*Mean words*	*Sum words*
Voluntary emission disclosure words 1997	**74.16**	**1854**
Voluntary emission disclosure words 1998	**58.56**	**1464**
Voluntary emission disclosure words 1999	**69.68**	**1742**
Voluntary emission disclosure words 2000	**90.08**	**2252**

Table 17: Spearman rho correlations between voluntary emission disclosures 1998 – 2000 and size-adjusted emissions for 1998/1999 and 1999/2000 NPI reporting periods

Disclosure Variable		*Size Adjusted NPI Emissions KG 1998–1999*	*Size Adjusted NPI Emissions KG 1999–2000*
Voluntary emission disclosure words 1998	Correlation co-efficient	.499*	
	Sig. (1-tailed)	.021	
	N	17	
Voluntary emission disclosure words 1999	Correlation co-efficient	.437*	.406*
	Sig. (1-tailed)	.040	.044
	N	17	25
Voluntary emission disclosure words 2000	Correlation co-efficient		.375*
	Sig. (1-tailed)		.032
	N		25

* Correlation is significant at the .05 level (one-tailed)

In examining proposition 1c Spearman rho correlations were undertaken between the quantity of voluntary emission disclosures in the preceding and corresponding annual report years from 1998 to 2000 and the size-adjusted emission levels for the 1998/1999 and 1999/2000 NPI reporting periods. Results are shown in Table 17 and indicate significant positive relationships ($p < .05$) between the quantities of voluntary emission disclosures in the 1998 (preceding) and 1999 (corresponding) annual reports and the size adjusted NPI emission levels for the 1998/1999 NPI reporting year ($r = .499$, $p = .021$ for 1998 and $r = .437$, $p = .040$ for 1999). Significant relationships were also identified between the quantity of emission disclosures in the 1999 (preceding) and 2000 (corresponding) annual reports and the adjusted levels of emissions for the 1999/2000 NPI reporting year ($r = .406$, $p = .044$ for 1999 and $r = .375$, $p = .032$ for 2000). This result is consistent with the results in propositions 1a and 1b which identified higher quantities of voluntary environmental disclosures and positive voluntary environmental disclosures for corporations with higher levels of emissions on the NPI.

Therefore, a significant positive relationship was identified over all of the test years between *quantities of published pollution emissions, adjusted by size of corporation, on the National Pollutant Inventory* and *quantities of voluntary emission disclosures in annual reports* consistent with the relationship suggested in proposition 1c.

P2a. There is an increase in the quantity of voluntary environmental disclosures discussing compliance with the NPI in annual reports during the NPI implementation period by corporations required to publish emission information on the NPI.

P2b. There is an increase in the number of corporations providing voluntary environmental disclosures concerning pollution/emissions in annual reports during the implementation period of the NPI by corporations required to publish emission information on the NPI.

In light of comments made during the development of the NPI, the publication of such environmental performance information may act as 'an impetus for cleaner production for industry' (Environment Australia 2000). Regardless of whether such changes in environmental performance are real or attempts to appear consistent with social values, the communication of information to relevant publics is essential. Therefore, changes in the content of disclosures during this period may be indicative of an increase in environmental regulation being an impetus to changes in environmental disclosure practices and considered legitimating tactics adopted by the corporations examined. Consequently this research also considers *what* is being disclosed as opposed to simply *how much* is being disclosed. Hence, propositions 2a and 2b test changes in the *content* of voluntary environmental disclosures during the implementation period of the NPI.

For the purposes of examining propositions 2a and 2b, the implementation period includes the 1997 annual report disclosures as well as the years examined earlier in this section. The 1997 year was included as the period from 1 July 1996 to 30 June 1997 represented the initial stages of the NPI and the draft NEPM for the NPI was released for public comment by the NEPC on 12 June 1997 with details on its availability promoted in state and national newspapers (NEPC 2002)[85].

Table 18 provides a summary of the level of detail provided by disclosing corporations regarding the NPI[86]. Of those corporations that mentioned the NPI by name in the annual

[85] See 4.2 for further details on the NPI implementation period.

[86] Corporations which included discussion on the NPI in the 1998 year were solely from the mining, oil and gas industry. By 1999 corporations in the chemical and fertilizer industries also included discussion on the NPI, and by 2000 corporations in the food and wine industry also included discussion on the NPI.

report, four provided a description of what it was in 1999 and three in 2000. Only one corporation mentioned that the NPI was available on the Internet in the 1999 and 2000 financial reporting years. No corporation disclosed the URL of the NPI in the annual reports of any of the test years. Examples of disclosures relating to the NPI and pollution emissions are presented in Appendix F.

Table 18: Level of detail provided on the NPI

Type of Disclosure	*1997*	*1998*	*1999*	*2000*
Mention NPI	1	1	4	7
Describe NPI	0	0	4	3
Mention NPI available on Internet	0	0	1	1
State the URL of the NPI	0	0	0	0

A Friedman test was conducted to test proposition 2a regarding changes in the quantity of NPI disclosures during the test period. The results of the Friedman test are shown in Table 19. The results indicate that there was a significant increase in voluntary disclosures mentioning the NPI during the test period ($N = 25$, $\chi^2 = 8.773$, $df = 3$, Asymp. Sig. = .032). Therefore, the sample corporations did begin including references to the NPI in annual reports during that time.

Table 19: Friedman test of changes in quantity of voluntary words regarding the NPI in annual reports from 1997 – 2000

Disclosure Variables	*Mean Rank*
Voluntary words NPI 1997	2.32
Voluntary words NPI 1998	2.30
Voluntary words NPI 1999	2.62
Voluntary words NPI 2000	2.76
Friedman Test Statistics	
N	25

Chi-Square	8.773
Df	3
Asymp. Sig	.032

Considering the findings from the Friedman test, proposition 2a suggesting that *there is an increase in the quantity of voluntary environmental disclosures directly mentioning compliance with the NPI in annual reports during the NPI implementation period by corporations required to publish emission information on the NPI* is supported.

Proposition 2a tested if corporations with emissions reported on the NPI changed their voluntary disclosure practices to include discussion regarding the NPI. In testing proposition 2b the analyses of changes in disclosure practices is extended by examining voluntary disclosures relating to pollution/emissions.

Table 20: Number of sample corporations disclosing emissions/pollution related information in annual reports (voluntary and mandatory sections) for the years 1997 – 2000

Type of disclosure relating to the NPI	*1997*	*1998*	*1999*	*2000*
Discuss/mention emissions (total voluntary and mandatory sections)	12	15	21	23
Discuss/mention emissions (total voluntary section)*	11	12	12	16
Discuss/mention emissions (voluntary section only)	11	10	8	10
Discuss/mention emissions (mandatory section only)	1	3	10	7
Discuss/mention emissions (both mandatory and voluntary sections)	0	2	3	6

* These companies disclosed emission information in the voluntary section with some also disclosing in the mandatory section for that year.

Table 20 displays the number of sample corporations disclosing emission information, and the location of those disclosures, in the annual reports during the test period. In 1997, only twelve companies discussed or mentioned emissions in the annual report; however, in 1999 twenty-one of the twenty-five sample corporations were discussing or mentioning emissions with twenty-three of the twenty-five corporations doing so in 2000 in either the mandatory or voluntary sections or both. Of these, eleven in 1997, twelve in 1998 and 1999, and sixteen in 2000, disclosed information in the voluntary sections of the annual report. The increase in the

number of corporations discussing/mentioning emissions in the 1999 and 2000 annual reports coincides with the first publication of the NPI database on the 31st January 2000[87].

Table 21: Cochran Q test for changes in number of companies' voluntarily discussing/mentioning emissions in 1997 and 2000

Frequencies		
	Mention emissions	
Disclosure Variables	*Yes*	*No*
Voluntary mention emissions 1997	11	14
Voluntary mention emissions 1998	12	13
Voluntary mention emissions 1999	12	13
Voluntary mention emissions 2000	16	9

Test statistics – Cochran Q Test	
N	25
Cochran's Q	11.800
Df	3
Asymp. Sig	.008

The change in the number of corporations discussing/mentioning emissions during the implementation period was statistically analysed using a Cochran Q test to examine proposition 2b. The results (see Table 21) show that the number of corporations voluntarily providing emission disclosures increased significantly between the 1997 reporting year and the 2000 reporting year (Q = 11.800, Asymp. Sig. = .008).

Therefore proposition 2b suggesting that *there is an increase in the number of corporations providing voluntary environmental disclosures concerning pollution/emissions in annual reports during the implementation period of the NPI by corporations required to publish emission information on the NPI* is supported. A discussion of the voluntary emission and NPI disclosures is provided in Appendix F.

[87] As shown in table 20, a number of corporations provided information in the mandatory sections of the annual report (one in 1997, three in 1998, ten in 1999 and seven in 2000) or in both mandatory and voluntary sections (two in 1998, three in 1999 and six in 2000). It should be noted that this coincides with the introduction of s. 299(1)(f) of the Corporations Act and disclosures in the mandatory section would be considered compliance with the requirements of the section.

5.3.2 Summary of results for NPI propositions

In summarising the results from testing the propositions relating to the NPI and the supplementary descriptive analyses it was found that:

- mean voluntary environmental disclosures increased during the period (descriptive);
- corporations with greater quantities of emissions, adjusted by size of the corporation, published on the NPI have predominantly significantly greater quantities of voluntary environmental disclosures in the annual report (P1a);
- voluntary environmental disclosures in the annual report during the implementation period were predominantly positive in nature (descriptive);
- corporations with greater quantities of emissions, adjusted by size of the corporation, published on the NPI have predominantly significantly greater quantities of positive voluntary environmental disclosures in the annual report (P1b);
- mean voluntary emission disclosures increased during the period (descriptive);
- corporations with greater quantities of emissions, adjusted by size of the corporation, published on the NPI had significantly greater quantities of voluntary emission disclosures in the annual report (P1c);
- there was a significant increase in the quantity of voluntary disclosures in the annual report relating directly to the NPI during the implementation period (P2a);
- the level of detailed information provided about the NPI was minimal (descriptive); and
- there was a significant increase in the number of corporations voluntarily discussing pollution emissions in the annual report during the implementation period (P2b).

5.3.3 Results of the propositions relating to s. 299(1)(f)

Pursuant with s. 299(1)(f) becoming effective in 1998, Table 22 shows the increase in the mean quantity of mandatory environmental disclosures from 37.96 words in 1998 to 166.20 words in 2000. Seven of the sample corporations included environmental information in the directors' report in the 1998 reporting year, increasing to twenty-four in 1999 and all sample corporations disclosed in 2000[88]. The low number of corporations reporting in 1998 could be

[88] As discussed in 4.6 it is beyond the scope of this thesis to determine whether the companies have complied in full with the requirements of s. 299(1)(f); that is, whether all breaches of environmental regulation have been

reflective of ASIC's submission to the PJSC in which they suggested that ASIC would take 'a rather light handed approach to the matter to begin with'.

Table 22: Mean and sum of words disclosed on s. 299(1)(f) 1998 – 2000

Year of disclosure per s. 299(1)(f)	*Mean words*	*Sum words*	*Number of corporations complying*
1998	37.96	949	7
1999	157.44	3936	24
2000	166.20	4155	25

Table 23: Descriptive statistics of environmental disclosure variables for voluntary and mandatory environmental disclosures in company annual reports

Environmental disclosure variable	*N*	*Minimum*	*Maximum*	*Sum*	*Mean*
Voluntary environmental disclosure words 1998	25	.00	1260.00	6513.00	260.52
Voluntary environmental disclosure words 1999	25	.00	1856.00	9555.00	382.20

disclosed. Consideration is only given to whether environmental information has been included in the directors' report consistent with the requirements of the section.

Voluntary environmental disclosure words 2000	25	.00	1358.00	10630.00	425.20
Mandatory environmental disclosure words 1998	25	.00	248.00	949.00	37.96
Mandatory environmental disclosure words 1999	25	.00	440.00	3936.00	157.44
Mandatory environmental disclosure words 2000	25	14	538.00	4155.00	166.20

During the test period, the sample corporations consistently provided greater quantities of voluntary environmental disclosures than mandatory disclosures[89]. Table 23 shows the minimum, maximum, sum and mean quantities of both voluntary and mandatory disclosures during the test period. Mean voluntary environmental disclosures for the years 1998, 1999 and 2000 were 260.52, 382.20 and 425.20 words respectively whereas mean mandatory disclosures were 37.96, 157.44 and 166.20 respectively. Mean proportions of positive environmental disclosures in the voluntary sections of the annual reports are displayed in Table 24 and range from .8564 in 1998, .9068 in 1999, and .9332 in 2000. In contrast, the proportions of positive environmental disclosures in the mandatory sections were .6400 in 1998, .5009 in 1999, and .6043 in 2000. The difference in quantity of disclosures and quantities of proportions of positive disclosures between the two sections of the annual report may be considered reflective of the narrow scope of s.299(1)(f) and the broad scope of the voluntary disclosure sections.

Table 24: Means of proportion of positive disclosure variables for voluntary and mandatory environmental disclosures in company annual reports 1998 – 2000

Proportion of positive disclosure variables in words	*N*	*Mean*
Positive proportion voluntary environmental disclosure words 1998	17	.8564
Positive proportion mandatory environmental disclosure words 1998	7	.6400
Positive proportion voluntary environmental disclosure words 1999	15	.9068
Positive proportion mandatory environmental disclosure words 1999	24	.5009

[89] As discussed in 4.5.1, voluntary environmental disclosures may also appear in the directors' report. Consequently, the quantity of mandatory disclosures may be overstated, and voluntary disclosures understated, in this study.

Positive proportion voluntary environmental disclosure words 2000	20	.9332
Positive proportion mandatory environmental disclosure words 2000	25	.6043

P3a. Australian listed corporations reporting non-compliance in accordance with the requirements of s. 299(1)(f) provide greater quantities of environmental disclosures in the voluntary section of the annual report than companies reporting no non-compliance.

P3b. Australian listed corporations reporting non-compliance in accordance with the requirements of s. 299(1)(f) provide greater quantities of positive environmental disclosures in the voluntary section of the annual report than companies reporting no non-compliance.

Details of the number of sample corporations reporting on compliance or non-compliance with environmental regulations, both per the requirements of s. 299(1)(f) (requiring disclosure in the directors' report) and in the voluntary sections of the annual report are displayed in Table 25. In 1998 three corporations disclosed breaches of environmental regulations in the directors' report, and six in both the 1999 and 2000 reporting years. Four reported that they had complied with environmental regulations in the 1998 reporting year and eighteen in both 1999 and 2000. In 1997, the year preceding the first s. 299(1)(f) reporting year, three of the sample corporations disclosed breaches with environmental regulations in the voluntary sections of the annual report; however, in 1998 seven corporations reported breaches of environmental regulation in the voluntary section of the annual report with two of those corporations also reporting breaches in the directors' report, two reporting no breaches had occurred in the directors' report and three not making any s. 299(1)(f) disclosures in the directors' report[90]. In 1999 four of the five, and in 2000 three of the four, corporations that reported non-compliance in the voluntary section of the annual report had reported compliance with environmental regulations in the directors' report. This could be due, however, to the interpretation of what is a 'significant environmental regulation' in s. 299(1)(f) and that only details relating to the entity's performance under significant environmental regulation must be disclosed[91].

[90] As previously stated, it is beyond the scope of this thesis to determine whether sample corporations complied with the requirements of the section.

[91] Although it should also be noted, as discussed in chapter 3, that in 2005 Energy Resources of Australia Limited (ERA) was the subject of a complaint for breaching s. 299(1)(f) by the ACF to ASIC. The complaint related to the fact that ERA had reported compliance with environmental regulations (that is, no breaches occurred) in the directors' report while reporting non-compliance in the voluntary section of the annual report. The ACF argued that the breaches reported in the voluntary section should have been reported in the directors' report under the requirements of s. 299(1)(f).

Table 25: Number of corporations reporting compliance status with environmental regulations in the mandatory and voluntary sections of the annual report

Disclosure Year	*Reported non-compliance with environmental regulation per s. 299(1)(f) in directors' report*	*Reported did comply with environmental regulation per s. 299(1)(f) in directors' report*	*Yes, reported non-compliance in the voluntary section of the annual report*	*Reported non-compliance in voluntary section and directors' report*	*Only reported non-compliance in voluntary section, reported compliance in directors' report*
1997	**N/A**	**N/A**	**3**	**N/A**	**N/A**
1998	**3**	**4**	**7**	**2**	**2****
1999	**6**	**18**	**5**	**1**	**4**
2000*	**6**	**18**	**4**	**1**	**3**

* Western Metals Limited provided disclosures in the directors' report but did not state whether the company had any breaches of environmental regulation

** Three companies did not make any disclosures in the directors' report

Table 26: Mann-Whitney U test results examining differences in the quantity of voluntary environmental disclosures between corporations reporting non-compliance with environmental regulation in the directors' report and those reporting compliance with environmental regulation in the directors' report per s.299(1)(f)

	Reported non-compliance?	*N*	*Mean Rank*	*Sum of Ranks*
Voluntary environmental disclosures words 1998	**Yes**	**3**	**3.33**	**10.00**
	No	**4**	**4.50**	**18.00**
	Yes	**6**	**13.75**	**82.50**

Voluntary environmental disclosures words 1999	**Yes**	**6**	**13.75**	**82.50**
Voluntary environmental disclosures words 1999	**No**	**18**	**12.08**	**217.50**
	Total	**24**		

	Voluntary environmental disclosures words 1998	*Voluntary environmental disclosures words 1999*	*Voluntary environmental disclosures words 2000*
Mann-Whitney U	**4.000**	**46.500**	**44.000**
Wilcoxon W	**10.00**	**217.500**	**65.000**
Z	**-.707**	**-.519**	**-.670**
Asymp. Sig.(2-tailed)	**.480**	**.604**	**.503**
Exact Sig. (1-tailed)	**.629[a]**	**.626[a]**	**.537[a]**

[a] Not corrected for ties

The results, both ranks and test statistics, of the Mann-Whitney U test for proposition 3a are displayed in Table 26. No significant difference in the quantity of voluntary environmental disclosures was identified for corporations reporting breaches in the mandatory sections of the annual report and those reporting no breaches (Z = -.707, Asymp. Sig. = .480 in 1998; Z = -.519, Asymp. Sig. = .604 in 1999; Z = -.670, Asymp. Sig. = .503 in 2000). The results suggest that corporations who have reported breaches under the requirement of s. 299(1)(f) have no greater propensity to provide larger quantities of voluntary environmental disclosures than those reporting no breaches.

Therefore, proposition 3a suggesting that *Australian listed corporations reporting non-compliance in accordance with the requirements of s. 299(1)(f) provide greater quantities of environmental disclosures in the voluntary section of the annual report than companies reporting no non-compliance* is not supported.

Table 27: Mann-Whitney U test results examining differences in the quantity of positive voluntary environmental disclosures between corporations reporting non-compliance and

those reporting compliance with environmental regulation in the directors' report per s.299(1)(f)

	Reported non-compliance?	*N*	*Mean Rank*	*Sum of Ranks*
Positive voluntary environmental disclosures words 1998	**Yes**	**3**	**3.67**	**11.00**
	No	**4**	**4.25**	**17.00**
Positive voluntary environmental disclosures words 1999	**Yes**	**6**	**13.75**	**82.50**
	No	**18**	**12.08**	**217.50**
Positive voluntary environmental disclosures words 2000	**Yes**	**6**	**10.83**	**65.00**
	No	**18**	**13.06**	**235.00**

	Positive voluntary environmental disclosures words 1998	*Positive voluntary environmental disclosures words 1999*	*Positive voluntary environmental disclosures words 2000*
Mann-Whitney U	**5.000**	**46.500**	**44.000**
Wilcoxon W	**11.000**	**217.500**	**65.000**
Z	**-.354**	**-.519**	**-.670**
Asymp. Sig. (2-tailed)	**.724**	**.604**	**.503**
Exact Sig. (1-tailed)	**.857[a]**	**.626[a]**	**.537[a]**

[a] Not corrected for ties

The Mann-Whitney U test was also conducted to examine whether corporations reporting non-compliance pursuant with s. 299(1)(f) had a propensity to provide greater quantities of positive voluntary environmental disclosures than corporations not reporting non-compliance (P3b). As shown in Table 27 the results are not significant (Z = -.354, Asymp. Sig. = .724 in 1998; Z = -.519, Asymp. Sig. = .604 in 1999; Z = -.670, Asymp. Sig. = .503 in 2000). Therefore, there are no significant differences between the quantity of positive voluntary disclosures in the annual reports of corporations that reported non-compliance in the mandatory sections of the annual report and those that did not report non-compliance. That is, corporations required to report breaches with environmental regulation in the mandatory section of the annual report did not provide greater quantities of positive voluntary disclosures than those not reporting breaches.

Consequently, proposition 3b which stated that *Australian listed corporations reporting non-compliance in accordance with the requirements of s. 299(1)(f) provide greater quantities of positive environmental disclosures in the voluntary section of the annual report than*

companies reporting no non-compliance is not supported. A discussion of the mandatory environmental disclosures is provided in Appendix G.

5.3.4 Summary of results relating to s. 299(1)(f) propositions

In summarising the results of testing the propositions, and supplemental descriptive analyses, relating to s. 299(1)(f) of the Corporations Act it was found that:

- corporations that reported non-compliance in the directors' report pursuant to the requirements of s. 299(1)(f) did not provide significantly greater quantities of voluntary environmental disclosures (P3a);
- corporations that reported non-compliance in the directors' report pursuant to the requirements of s. 299(1)(f) did not provide significantly greater quantities of positive voluntary disclosures (P3b);
- the sample corporations provided greater quantities of voluntary environmental disclosures than mandatory environmental disclosures during the test period (descriptive);
- the proportion of positive voluntary environmental disclosures was greater than the proportion of positive mandatory environmental disclosures during the test period (descriptive).

5.4 Chapter Summary

This chapter provided the results of testing the propositions stated in chapter 3 to address the objectives of the thesis. Discussion on the findings of the propositions relating to the NPI and s. 299(1)(f) is now provided in sections 5.4.1 and 5.4.2 respectively.

5.4.1 Discussion of analyses for propositions relating to the NPI

Propositions 1a, 1b, and 1c tested the relationship between the quantity of size-adjusted NPI emissions and the *quantity* of voluntary environmental disclosures, positive voluntary

environmental disclosures and voluntary emission disclosures respectively. In testing proposition 1a, it was determined that there was a predominantly significant positive relationship between the level of publicly disclosed pollution emissions of corporations on the NPI and the level of voluntary environmental disclosures made in company annual reports for the twenty-five sample companies. A significant positive relationship was identified between the quantity of 1998 (preceding year) annual report voluntary environmental disclosures and the 1998/1999 size-adjusted NPI emissions and the 1999 (preceding year) and 2000 (corresponding year) annual report voluntary environmental disclosures and the 1999/2000 size-adjusted NPI emissions. The results are consistent with previous literature that has identified greater levels of environmental disclosures in annual reports for corporations that have, or may be perceived to have, a greater impact on the environment (Al-Tuwaijri, Christensen & Hughes II 2004; Brown & Deegan 1998; Li, Richardson & Thornton 1997; Deegan & Rankin 1996; Patten 1992).

In particular, this result is consistent with Patten's (2002b) United States study which examined relationships between the quantity of emission data on the TRI and environmental disclosures in US company annual reports. The similar results obtained between this research, using Australian pollution emission data, and that conducted by Patten, may provide support for his argument that pollution emission information is a useful measure of environmental performance[92]. The similarities between the NPI and TRI[93] allow greater comparability between studies undertaken in different countries, particularly when the OECD has recommended that member countries adopt such inventories. As explained by Patten (2002b, p. 772):

> The finding that worse environmental performance is associated with greater environmental disclosure supports arguments that the level of social disclosure is a function of the exposure a company faces to the social/political environment.

Therefore, the greater the environmental impact of the sample corporations (as measured by the quantity of emissions) the greater the level of legitimating tactics (in this case the level of voluntary environmental disclosures in the annual report) used to reduce or minimise any potential legitimacy threat as suggested by Zeghal and Ahmed (1990). As the extent of

[92] Although this thesis does not claim to be using the NPI as an environmental performance measure but rather that the publication of pollution emission data may affect corporate legitimacy.

[93] The NPI, although not as extensive as the TRI, is broadly based on the TRI. See chapter 3 for further information on the development of the NPI.

voluntary environmental disclosures is determined by management, legitimacy theory may be considered a useful explanatory theory regarding the voluntary environmental disclosure/environmental performance relationship.

The descriptive analyses relating to proposition 1a identified an increase in the quantity of voluntary environmental disclosures during the four-year test period. This suggests, for the sample corporations, that the steady increase in Australian voluntary environmental disclosures in annual reports noted by previous researchers over the past few decades (Deegan & Gordon 1996; Trotman & Bradley 1981; Trotman 1979) has continued.

In testing proposition 1b, a significant positive relationship was identified between the quantity of 1998 (preceding year) annual report positive voluntary environmental disclosures and the 1998/1999 size-adjusted NPI emissions and the 1999 (preceding year) and 2000 (corresponding year) annual report positive voluntary environmental disclosures and the 1999/2000 size-adjusted NPI emissions. This finding was consistent with Australian research undertaken by Deegan, Rankin and Voght (2000), Deegan and Gordon (1996), Deegan and Rankin (1996) and Guthrie and Parker (1990) who identified a propensity toward positive voluntary disclosures in Australian company annual reports. It is suggested that diverting attention to positive environmental performance activities is a useful legitimating strategy (Lindblom 1994).

Proposition 1c tested the relationship between the quantity of voluntary emission disclosures and the size-adjusted NPI emissions of the sample corporations. The statistical analyses identified significant positive correlations for both the preceding (anticipatory) and corresponding (reactive) annual report disclosures for both the 1998/1999 and 1999/2000 NPI reporting years. This finding is consistent with the findings from proposition 1a and is suggestive of strategies which may be used to prevent challenges to legitimacy (O'Donovan 2002; Ashforth & Gibbs 1990) and/or to repair legitimacy (O'Donovan 2002). The result highlights the potentially strategic nature of voluntary disclosures in that the sample corporations with greater quantities of emissions disclosed on the NPI were also the corporations with the greater quantities of voluntary emission disclosures in annual reports. The descriptive statistics also identified an increase in the overall quantity of voluntary emission disclosures in annual reports made by the sample corporations between 1997 and 2000.

Propositions 2a and 2b tested changes in the *content* of voluntary environmental disclosures during the implementation period of the NPI. An examination of the content of disclosures, and possible changes therein, was undertaken to further consider the discretionary nature of voluntary disclosures in annual reports. Furthermore, it would provide empirical evidence as to whether changes in environmental regulation acts as an impetus to changes in voluntary environmental disclosure practices.

As a consequence of the expectation of the NPI to improve community right-to-know and result in greater pressure on corporations to improve environmental performance, it was argued that the introduction of the NPI may be perceived as a potential legitimacy threat for corporations published on the database. Consistent with legitimacy theory, if a potential legitimacy threat was perceived, the corporations may respond by increasing the quantity of voluntary disclosures discussing, or relating to compliance with, the NPI in the annual report during the implementation period. Proposition 2a tested changes in the quantity of voluntary disclosures on the NPI between 1997 and 2000. A significant increase in the quantity of voluntary NPI disclosures was identified over the four year period. This result was consistent with that of Patten (2002b) who found that the publication of pollution emission data on the US TRI was deemed to be a legitimacy threat to US corporations subject to its reporting requirements. This may also suggest that several of the sample corporations adopted Oliver's (1991) compliance approach by attempting to portray compliance with the regulations of the society in which they operate.

Descriptive discussion of the NPI disclosures (see Appendix F), however, identified that while an increase in the quantity of disclosures had occurred, the level of detail provided about the NPI in annual reports was minimal. It was also noted that the sample corporations tended to discuss positive aspects of pollution/emission management, and that discussion on the NPI was often preceded and/or followed by favourable aspects of the corporation's operations, therefore limiting the extent of information provided to readers regarding a source of information about the corporation's environmental performance. Ashworth and Gibbs (1990) suggest that the suppression of detailed information may reduce the potential development of a legitimacy gap.

Proposition 2b tested changes in the number of corporations making NPI related disclosures; that is disclosures relating to emissions in the annual report. A significant increase was identified with 11 corporations voluntarily providing emission disclosures in the 1997 annual

report, 12 in the 1998 and 1999 annual reports, and 16 providing disclosures in the 2000 annual report.

Therefore, considering the findings of propositions 2a and 2b it may be suggested that a change in environmental regulation may act as an impetus to changes in voluntary environmental disclosure practices in annual reports of Australian companies.

5.4.2 Discussion of analyses for propositions relating to s. 299(1)(f)

Prior to the introduction of s. 299(1)(f) researchers questioned the reliability (Deegan & Rankin 1996), usefulness (Tilt 1994) and credibility (Deegan & Gordon 1996) of voluntary environmental disclosures in annual reports. As discussed earlier, voluntary environmental disclosures were predominantly positive in nature, containing little negative information (Deegan & Rankin 1996). Based on such results, it has been argued that the strategic use of voluntary disclosures by companies is indicative of a need for mandatory reporting requirements. As stated by Deegan, Rankin and Voght (2000, p. 127):

> Arguably, stakeholders have a 'right to know' about the social and environmental implications of an organization's operations at all times—not just when management has been 'shocked' into action by 'legitimacy threatening' events. Regulation might be necessary to ensure that this 'right to know' is satisfied.

The amendment of the Australian Corporations Law to include s. 299 (1)(f) has provided an opportunity to examine environmental disclosures within both a voluntary and mandatory disclosure framework. Propositions 3a and 3b tested whether corporations required to report non-compliance with environmental regulation in the mandatory section of the annual report had a greater propensity to disclose higher quantities of voluntary environmental disclosures and/or positive voluntary environmental disclosures, than corporations reporting no non-compliance. Utilising a legitimacy theory perspective, and considering the findings of previous research (Deegan, Rankin & Voght 2000; Brown & Deegan 1998; Deegan & Rankin 1996), it would be expected that those corporations required to disclose non-compliance with environmental regulations in the directors' report pursuant to s. 299(1)(f) would be faced with an increased legitimacy threat as compared to those reporting no non-compliance.

Proposition 3a tested whether the sample corporations reporting non-compliance had a greater propensity to disclose larger quantities of voluntary environmental disclosures than those reporting compliance. No significant differences in quantity of disclosure were identified between the two groups which is inconsistent with the findings of previous research by Deegan, Rankin and Voght (2000) and Deegan and Rankin (1996). This result was also inconsistent with the findings of propositions 1a and 1c which found greater quantities of voluntary environmental and emission disclosures for corporations with greater levels of emissions published on the NPI.

The findings from proposition 3b were also inconsistent with the results of previous research. Proposition 3b tested whether sample corporations reporting non-compliance provided greater quantities of positive environmental disclosures than those reporting no non-compliance. The results identified no significant difference in the quantities of positive disclosures between the two groups. This finding was surprising considering the previous empirical research which found that Australian corporations disclose higher quantities of positive disclosures following negative media coverage of environmental breaches (Deegan, Rankin & Voght 2000) and prosecutions by environmental protection agencies for breaches of environmental regulation (Deegan & Rankin 1996). The findings from propositions 3a and 3b suggest that the requirement to disclose non-compliance with environmental regulations pursuant to s. 299(1)(f) may not have been considered a threat to the legitimacy of affected corporations.

It was identified in the descriptive discussion, however, that the sample corporations did provide greater quantities of voluntary environmental disclosures than mandatory environmental disclosures during the test period. This result is not surprising considering the narrow scope of s. 299(1)(f) and the discretionary nature of voluntary environmental disclosures as noted in the findings from the propositions relating to the NPI. It is also consistent with the findings of Guthrie and Parker (1990) who undertook an international comparative analysis of voluntary and mandatory disclosure practices. They argued that corporations appeared to respond to disclosure regulation by opting to 'disclose such information only to the minimum degree required to subdue the calls for further disclosure or regulation' (1990, p. 172).

Another possible explanation for the findings of the descriptive analyses relating to s. 299(1)(f) was the AIGs (1999) recommendation for companies to disclose the majority of information regarding environmental performance in the voluntary section of the annual

report. The AIG (1999) suggested that providing excessive information in the directors' report could detract from the importance of other information in the annual report and that the information required for s. 299(1)(f) would be less detailed and more generalised than that provided in the voluntary sections. Several companies referred readers of the mandatory disclosure section to voluntary disclosures elsewhere in the annual report or to other sources of voluntary disclosures such as company websites and stand-alone reports for further information on environmental performance.

In considering the overall findings of this chapter, voluntary environmental disclosures can be considered highly discretionary and may be influenced by changes to environmental regulation such as the NPI. It was noted that during the test period, there was a positive relationship between the quantity of published emissions on the NPI, and the quantity of voluntary environmental, positive voluntary environmental and emission disclosures in the annual report. There was also a significant increase in the quantity of voluntary disclosures mentioning the NPI and a significant increase in the number of corporations voluntarily discussing emissions in the annual report. The results of testing propositions 2a and 2b relating to the NPI and emissions provide support for Oliver's (1991) compliance approach to organisational legitimacy. Therefore, it would appear that voluntary disclosures may indeed be considered a useful tool for management to change societal perceptions of the corporation's environmental performance as identified by O'Donovan (1999).

It does not appear from the findings of propositions 3a and 3b that corporations reporting breaches with environmental regulation in compliance with s. 299(1)(f) have a greater propensity to utilise voluntary environmental disclosures than those reporting compliance under the section; however, overall, the sample corporations did provide significantly greater quantities of voluntary environmental disclosures than mandatory disclosures. In addition the proportions of positive disclosures were greater in the voluntary sections than the mandatory sections of the annual reports. Consequently, if the discretionary nature of the voluntary environmental disclosure is taken into account (i.e. managements ability to alter the content and quantity of disclosures), then the limited scope of s. 299(1)(f) may reduce its usefulness in providing a more balanced view of corporate environmental performance.

The following chapter provides a summary of the research presented in this thesis. Chapter 6 proceeds with a restatement of the research objectives developed in chapter 3. The research findings are then discussed within the context of the objectives. The implications of the

research are then discussed, followed by a summary of the main limitations of the research method. Finally, future research opportunities are proposed.

Chapter 6

SUMMARY AND CONCLUSIONS

6.1 Introduction

This chapter provides a summary of the research in terms of the objectives stated in sections 3.6 and 3.8. First, the objectives are restated. This is followed by a summary of the research results and the theoretical, practical and research method implications of the findings. A summary of the limitations discussed in chapter 4 is then provided. Finally, opportunities for subsequent research are considered.

6.2 Research Objectives

The first objective of this research was to examine the potentially legitimising (and discretionary) nature of voluntary environmental disclosures by determining whether:

1. a change in environmental regulation acts as an impetus to changes in voluntary environmental disclosure practices in annual reports of Australian companies;

and, for comparison with previous research such as that undertaken by Patten (2002b) if:

2. there is a relationship between the quantity of published pollution emissions on the NPI and the quantity of voluntary environmental disclosure in annual reports of Australian corporations.

The final research objective investigated the potentially legitimising nature of voluntary environmental disclosures in a combined voluntary/mandatory disclosure system by examining whether:

3. there are significant differences between environmental disclosure practices in the voluntary sections of Australian corporate annual reports for corporations reporting non-compliance, and those not reporting non-compliance, with environmental regulations in the directors' report pursuant to the requirements of section 299(1)(f).

Objectives 1 and 2 were addressed by testing five propositions. The initial three propositions examined whether corporations with greater quantities of published pollution emissions

(adjusted by size of the corporations) on the 1998/99 and 1999/00 NPI databases had greater quantities of total voluntary environmental disclosures (P1a); had greater quantities of positive voluntary environmental disclosures (P1b); and/or, had greater quantities of voluntary emission disclosures (P1c) in annual reports for the preceding and corresponding years (ranging from 1998 to 2000). The remaining two propositions examined whether corporations increased the quantity of voluntary environmental disclosures in the annual report discussing compliance with the NPI (P2a); and/or disclosures concerning pollution emissions (P2b) during the implementation period of the NPI (1997 to 2000).

The formulation of objective 1 stemmed from findings in the existing literature relating to voluntary environmental disclosure practices in Australian annual reports. As discussed in chapter 2, previous research has identified that Australian corporations increase the quantity of voluntary environmental disclosures following negative environmental events and adverse media attention relating to these and other events (Deegan, Rankin & Tobin 2002; Deegan, Rankin & Voght 2000; Brown & Deegan 1998; Deegan & Rankin 1996). Furthermore, voluntary environmental disclosures tend to be mostly of a positive nature (Deegan, Rankin & Tobin 2002; Deegan, Rankin & Voght 2000; Deegan & Gordon 1996; Deegan & Rankin 1996). Evidence from several US studies suggests that, in similar circumstances, such disclosures may have potential economic benefits to the corporation (Freedman & Patten 2004; Blacconiere & Northcutt 1997; Blacconiere & Patten 1994). In addition, Australian managers also perceive voluntary environmental disclosures as potentially useful in altering perceptions of company performance (O'Donovan 1999).

The existing Australian literature provides some evidence of the strategic nature of voluntary environmental disclosures by considering the timing, quantity and nature of such disclosures (Deegan, Rankin & Tobin 2002; Deegan, Rankin & Voght 2000; Brown & Deegan 1998; Deegan & Rankin 1996; Guthrie & Parker 1989). Limited evidence, however, has investigated the impact of a particular event on the *content* of disclosures. The first primary contribution of this thesis to the literature was an examination of whether corporations altered the content of voluntary environmental disclosures in response to a potential or actual legitimacy threat in the form of a new environmental regulation which is not directly applicable to the annual report, in this case the NPI.

The review of literature from objective 1 also led to the identification of objective 2. As discussed in earlier chapters and above, companies with what is sometimes deemed "poor"

environmental performance have a propensity to disclose greater quantities of voluntary environmental disclosures (Al-Tuwaijri, Christensen & Hughes II 2004; Li, Richardson & Thornton 1997; Deegan & Rankin 1996). In particular, Patten (2002b) examined the relationship between the quantity of environmental disclosures in US 10k reports and levels of emissions reported on the TRI (the US equivalent of the NPI). Objective 2, therefore, provided the second contribution of this thesis by extending the research undertaken by Patten (2002b) to also include the relationship between size-adjusted quantity of emissions and the quantity of positive voluntary environmental and voluntary emission disclosures respectively.

Objective 3 was addressed through a comparative examination of the quantity (P3a) and nature (P3b) of voluntary environmental disclosures in annual reports of Australian corporations reporting non-compliance with environmental regulation and Australian corporations reporting no non-compliance in annual reports pursuant to the requirements of s. 299(1)(f) of the Corporations Act.

Objective 3 stemmed from suggestions by previous researchers that voluntary environmental disclosures in annual reports may lack credibility (Deegan & Gordon 1996; Deegan & Rankin 1996), be misleading (Deegan & Rankin 1996) and provide limited useful information to users (Hughes, Anderson & Golden 2001; Tilt 1994). Such concerns led, to some extent, to the amendment to the Corporations Law in 1998 to include s. 299(1)(f), a mandatory environmental disclosure requirement. While the amendment was considered a positive step to improving the provision of environmental performance information to users, this thesis questioned the potential for the mandatory disclosures to be overshadowed or counteracted by the voluntary disclosures appearing in the same document. Hence, objective 3 provided the final primary contribution of this thesis by undertaking a comparative examination of the quantity and nature of voluntary environmental disclosures in annual reports of corporations reporting compliance and non-compliance with environmental regulations pursuant to the requirements of s. 299(1)(f).

6.3 Summary of Results

6.3.1 Objectives 1 and 2

The results of this thesis presented in section 5.3.1 suggest that there is a positive relationship between the level of publicly disclosed pollution emissions of companies and the level of voluntary environmental disclosures made in company annual reports for the twenty-five sample companies. It provides support for previous research that has identified a significantly high level of voluntary environmental disclosures among companies that have experienced negative environmental events or the publication of environmental information that may be perceived as negative (Deegan, Rankin & Voght 2000; Li, Richardson & Thornton 1997; Deegan & Rankin 1996; Patten 1992). Furthermore, the results are consistent with those obtained by Patten (2002b) who identified a significant relationship between pollution emission levels on the TRI and environmental disclosures by US firms. This research identified that corporations with greater levels of emissions provided greater levels of voluntary emission disclosures in annual reports.

Also consistent with previous research (Deegan, Rankin & Voght 2000; Deegan & Gordon 1996; Deegan & Rankin 1996; Guthrie & Parker 1990) it was found that, in general, corporations with greater quantities of emissions (or what may be perceived as being poorer environmental performance) tended to have a greater propensity to provide positive voluntary environmental disclosures than those with lower emission levels.

In addition, there was a significant increase in the quantity of disclosures discussing, or mentioning compliance with, the NPI during the implementation period and in the number of corporations voluntarily providing emission disclosures in the annual report. Therefore, this research has identified that a change in environmental regulation may act as an impetus to changes in voluntary environmental disclosure practices. As discussed in 5.4.1 this provides support of the strategic nature of voluntary disclosures and that the NPI may have been perceived as a legitimacy threat by those companies.

6.3.2 Objective 3

The descriptive analysis accompanying the findings relating to objective 3, presented in section 5.3.4, identified the quantity of voluntary environmental disclosures as being greater than the quantity of mandatory environmental disclosures[94] in 1998, 1999 and 2000. The

[94] As stated in 4.5.1 voluntary environmental disclosures may also be provided alongside mandatory environmental disclosures in the directors' report. It was problematic, and beyond the scope of this study, to identify what is strictly a mandatory environmental disclosure and what is a voluntary environmental disclosure

findings from the descriptive analysis were consistent with expectations based on the limited scope of the section and those proposed by Guthrie and Parker (1990) of companies adopting a minimalist approach to mandatory disclosure reporting and appear to suggest that companies followed the AIG (1999) recommendations on compliance being:

- limiting mandatory disclosure to one or two pages;
- keeping voluntary and mandatory disclosures separate in the annual report[95];
- not providing excessive information in the mandatory section so as not to detract from other information in the annual report;
- providing less detailed information in the mandatory section than that provided in the voluntary section.

The descriptive analysis also identified that the proportion of positive environmental disclosures was greater in the voluntary section than the mandatory section for all years examined. It could be argued that this finding was expected as the section compels disclosure of negative information if breaches have occurred. Guthrie and Parker (1990, p. 170) suggested that 'corporate "bad news" disclosures appear to be made at the instigation of government or private (accounting profession) regulation'; however, the wording of s. 299(1)(f) also compels corporations who have *not* breached environmental regulation to disclose that no breaches have occurred, hence providing an opportunity for the provision of positive information on environmental performance in the directors' report.

The results in addressing objective 3 identified no significant difference in the quantity of voluntary environmental disclosures for corporations reporting non-compliance with environmental regulations (pursuant to the requirements of s. 299(1)(f)) than those not reporting non-compliance. This was inconsistent with previous Australian research which had identified a propensity for larger quantities of voluntary environmental disclosures by companies following adverse media attention (Deegan, Rankin & Voght 2000) and fines and prosecutions by environmental protection authorities (Deegan & Rankin 1996). Also inconsistent with previous research (Deegan, Rankin & Voght 2000; Deegan & Rankin 1996) was the finding that the companies reporting non-compliance did not have significantly

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within the directors' report without full details of the corporation's actual environmental performance and interpretation of s. 299(1)(f). Therefore, the quantity of mandatory environmental disclosures may in fact be understated in this study.

[95] Several companies did, however, refer the reader of the directors' report to the voluntary environmental disclosure section for more information on company performance.

greater quantities of positive voluntary environmental disclosures than those not reporting non-compliance.

The findings of this study also appear inconsistent with the exploratory study undertaken by Frost (2001). Frost did identify a significant increase in total environmental disclosures and negative environmental disclosures in the annual report for companies that reported breaches pursuant to the requirements of the section. A significant, although less pronounced, increase in total environmental disclosures was also identified for companies not reporting breaches; however, unlike previous research (as discussed in sections 2.8 and 3.9) and the approach used in this study, total environmental disclosures, s. 299(1)(f) disclosures and negative environmental disclosures in Frost's study were the sum of voluntary and mandatory disclosures with no differentiation between the locations of disclosures within the annual report.

6.4 Implications of the Research

6.4.1 Theoretical implications

In general, this study has provided inconsistent support for previous research which suggests that legitimacy theory is a useful explanatory theory for the voluntary environmental disclosure practices of corporations (Hedberg & Von Malmborg 2003; O'Dwyer 2003; Brown & Deegan 1998; O'Donovan 1999; Neu, Warsame & Pedwell 1998; Deegan & Gordon 1996; Deegan & Rankin 1996; Patten 1991; Guthrie & Parker 1989). The findings from testing proposition 1a found a predominantly positive relationship between the level of size-adjusted emissions and the quantity of voluntary environmental disclosures in the annual report for the 1998 (anticipatory) annual report disclosures and the 1998/99 NPI emission quantities, and both the 1999 (anticipatory) and 2000 (reactive) annual report disclosures and the 1999/2000 NPI emission quantities. This is consistent with previous research which has suggested that companies with "poorer" environmental performance face a potentially greater threat to organisational legitimacy and, as such, are more likely to utilise voluntary environmental disclosures as a legitimating strategy than those facing a lesser legitimacy threat (Al-Tuwaijri, Christensen & Hughes 2004; Patten 2002b; Li, Richardson & Thornton 1997; Deegan & Rankin 1996).

Similarly, the findings from testing proposition 1b identified a predominantly significant positive relationship between the quantities of positive voluntary environmental disclosures in the annual report and the levels of size-adjusted NPI emissions. The descriptive discussion also noted a propensity for greater proportions of positive voluntary environmental disclosures than negative or neutral disclosures. This finding was consistent with suggestions by Lindblom (1994) that organisations may use legitimating strategies in which attention is diverted from less favourable environmental performance activities to those that are more favourable.

More specifically, the findings from testing proposition 1c identified a significant positive relationship between the level of size-adjusted emissions and the quantity of voluntary emission disclosures made by the sample companies. The descriptive discussion also noted an increase in the overall quantity of voluntary emission disclosures between 1998 and 2000. This suggests that the legitimating strategies adopted by the sample corporations are, at least, symbolic and attempting to portray the organisation as being 'consistent with social values and expectations' (Ashforth & Gibbs 1990). Furthermore, in testing proposition 1c, significant positive relationships were identified for the quantity of voluntary emissions disclosures in both the preceding (anticipatory) and corresponding (reactive) years' annual reports and the size-adjusted levels of emissions for the 1998/1999 and 1999/2000 NPI reporting years. Therefore, the use of voluntary emission disclosures may be seen as a proactive tactic under a circumstance where management had advance knowledge of the NPI as a potential legitimacy threat (O'Donovan 2002; Suchman 1995) and/or as a reactive process in order to repair legitimacy (O'Donovan 2002).

The results from testing propositions 2a and 2b suggest that several of the corporations did perceive the NPI to be an issue to be included in the annual report and have adopted legitimating strategies in response to the real or perceived threat of the NPI. Consequently, this thesis provided support for the suggestion that environmental regulation such as the NPI may act as an impetus for changes in the environmental disclosure practices of companies. This is consistent with legitimacy theory and that the types of disclosures made by Australian companies are also, to an extent, reflective of the regulatory environment in which those companies operate as suggested by Holland and Yee (2003) in their examination of US and UK companies.

While it is not possible from this study to determine the actual motivation of the companies to disclose information relating to the NPI, some possible reasons can be speculated from the existing literature on legitimacy theory. The sample corporations could be argued to have adopted a compliance approach in that they communicated compliance with the NPI or provided emissions information to readers of the annual report. The compliance approach is a legitimating strategy used when corporations attempt to portray a compliance with the regulations, norms and values of the society in which they operate (Oliver 1991). It may also be suggested that the corporations may be disclosing in order to expose their association with Environment Australia and the NPI in an attempt to gain legitimacy as a consequence of that alliance. This may also be consistent with the results of O'Donovan (2002) who found that corporate executives would disclose information in the annual report to share the blame of their activities with government or regulatory authorities. As suggested by Ullmann (1985) under some circumstances it may be beneficial for the corporation to be seen by stakeholders as bound by government regulations in order to show that expenditure on socially responsible activities is not a voluntary or frivolous activity of management.

Descriptive examination of the information content of the NPI disclosures (see Table 18 and Appendix F) showed that few companies provided readers with details on the location or availability of the data provided by the NPI. In particular it appeared that companies that did mention the NPI generally avoided providing readers with information regarding this source of pollution emission information. Hence it may be suggested that these companies were adopting both a compliance and avoidance approach; that is, they are demonstrating compliance with the requirements of the NPI but limiting the information provided. As stated by O'Donovan (2002, p. 359) this could be expected in a case where 'the general public did not know the issue in the case and it is logical to think that the corporation would wish to restrict the public's knowledge of this event as long as it could'. This argument is plausible considering there was concern in regards to the level of knowledge of the NPI among the general community during its early stages.

While an increase in the number of corporations mentioning the NPI did occur, the majority of the sample did not mention the NPI directly in the annual report. These corporations and those that provided no NPI related disclosures would appear to be adopting an avoidance strategy in which the issue is ignored (O'Donovan 1999). It could also be argued that the non-disclosure organisations simply did not perceive the NPI to be a threat or that the threat was only minimal (O'Donovan 2002).

While the findings in addressing the objectives relating to the NPI generally provided support for legitimacy theory, this was not the case from the findings in addressing objective 3. In addressing objective 3 it was found that companies required to report non-compliance with environmental regulations pursuant to the requirements of s. 299(1)(f) did not have a propensity toward either greater levels of voluntary disclosures nor greater quantities of positive disclosures than those not reporting non-compliance. These results were somewhat surprising as previous research had identified both increased disclosure levels and quantities of positive disclosures for companies that had experienced a negative environmental event or media attention relating to a negative environmental event (Deegan, Rankin & Voght 2000; Deegan & Rankin 1996).

The findings from testing propositions 3a and 3b appear to suggest that sample corporations reporting non-compliance under s. 299(1)(f) did not perceive reporting negative information under this requirement as an increasing threat to legitimacy. Alternatively, as the sample corporations were also subject to the NPI as a potential legitimacy threat during the test period (and the findings of this study suggest that the NPI may have been considered an actual legitimacy threat) it may be proposed that when faced with both the NPI and s. 299(1)(f) as simultaneous legitimacy threats, the NPI was considered a greater threat. As such, the sample corporations may have responded primarily to the threat from the NPI and not to the potential threat from s. 299(1)(f). While this appears to be in contradiction to the concerns raised by industry groups and corporations when the section was initially amended to the Corporations Law it is, however, consistent with the limitations faced by the section since its inception. First, ASIC indicated in its submission to the PJSC (Commonwealth of Australia 1999) that it would take 'a rather light handed approach to [the section] to begin with'. Second, the section was recommended for repeal by the PJSC in 1999 and in the exposure draft for the Corporations Amendment Bill 2002. Furthermore, the Australian Conservation Foundation has suggested that various incidences of non-compliance with the section have occurred since its initial introduction and that enforcement of the requirements by ASIC has remained lax (ACF 2005). Taking into account these issues, and those discussed in section 6.4.2, it would not be surprising for corporations to not consider s. 299(1)(f) as a legitimacy threat or as a lesser threat than others such as the NPI.

6.4.2 Practical implications

This study identified that a change in environmental regulation did result in a change in the *content* of voluntary environmental disclosures in the annual report during the test period with a significant increase in the quantity of disclosures discussing the NPI and in the number of corporations making voluntary emission disclosures. The research also identified a positive relationship between the quantity of voluntary emission disclosures in the annual report and the quantity of emissions published on the NPI. This finding is similar to that of Hogner (1982), Guthrie and Parker (1989) and Deegan, Rankin and Tobin (2002) and suggests that voluntary environmental disclosures may be reflective of changes to the operating environment of an entity. Therefore, it may be suggested that voluntary disclosures, although discretionary, may provide some indication of the entity's actual environmental activities. These findings may provide some support for industry arguments to maintain the existence of a voluntary disclosure system.

It was posited in section 3.8 of this thesis that the broad scope of voluntary disclosures and the limited scope of s. 299(1)(f), together with expectations that mandatory disclosure may be minimal (Guthrie & Parker 1990), could result in mandatory annual report disclosures being overshadowed or counteracted by voluntary annual report disclosures. The finding that corporations reporting non-compliance pursuant to s. 299(1)(f) had no greater propensity for higher quantities of voluntary environmental disclosures (P3a) or positive voluntary environmental disclosures (P3b) may suggest that the potential effect of voluntary disclosures is no greater than for those corporations reporting no non-compliance. As discussed in section 6.4.1, however, these findings may simply be reflective of the limitations encountered by the section since its inception and, as a consequence of those limitations, a perception that it did not represent a legitimacy threat.

If this is the case, and considering the findings relating to the discretionary nature of voluntary environmental disclosures identified in testing the propositions relating to the NPI (and the descriptive findings presented with propositions 3a and 3b), then questions could be raised as to whether the section is able to produce the outcomes which were proposed at its inception. That is, can its limited scope provide an assurance that information on the environmental performance of Australian corporations in annual reports offers users a more balanced view of actual environmental performance? Similar concerns were recently expressed in submissions to the Parliamentary Joint Committee on Corporations and Securities (PJCCS) enquiry into corporate responsibility. The Australian Conservation Foundation stated that '[s. 299(1)(f)] is so ridden with qualifications that most companies provide no meaningful information, even

when they have breached environmental laws' (PJCCS 2006, p. 137). The Australian Securities and Investments Commission also criticised the scope of the section suggesting that 'the provision did not encourage more of the resources sector to report more broadly on sustainability issues' (PJCCS 2006, p. 137).

Consistent with the findings of Frost's (2001) exploratory study, differences in mandatory disclosure practices of the sample corporations were also noted in this research. This may impact upon comparability of reporting, a qualitative characteristic of the Australian financial reporting framework (AASB *Framework for the Preparation and Presentation of Financial Statements*, para. 39), between and within corporations. Therefore, while previous authors have expressed concern regarding the discretionary nature of voluntary environmental disclosures in annual reports, it would appear that existing mandatory environmental disclosure practices are also the subject of management discretion. Descriptive discussion in Appendix G identified that the approaches adopted in compliance with s. 299(1)(f) varied between sample corporations. As discussed in section 5.3.3, companies reported non-compliance with environmental regulation in either the directors' report, the voluntary section of the annual report, or both. Other differences in mandatory disclosure approaches may be due to the company's interpretation of the requirements of the section. There appeared to be differences in the interpretation of what a significant environmental regulation was; what, where and when details of environmental performance should be included; and, whether environmental performance was determined by "materiality". The latter is of particular interest as it was specifically addressed in Practice Note 68 paragraph 74 (b) (issued by ASIC following the initial amendment) which states that the information to be provided is not limited to that which is considered material under accounting conventions. This point was also raised recently by the Australian Conservation Foundation which stated that 'companies also commonly read a 'materiality' qualification into the clause, which eviscerates it' (PJCCS 2006, p. 137).

Overall, taking into account the discretionary nature of both the voluntary and mandatory environmental disclosures in annual reports, and that s. 299(1)(f) has sufficient limitations to suggest it is not a threat to corporate legitimacy (and perhaps not taken seriously by corporations), concern remains as to the quality of the Australian annual report environmental reporting system. This issue does require further consideration as:

- socially responsible investment has increased substantially in Australia since 2001 (Ethical Investment Association 2004);
- Australian companies continue to lag behind many other countries in corporate responsibility reporting (Department of the Environment and Heritage 2005); and
- the only Australian mandatory environmental disclosure requirements are s. 299(1)(f) and s. 1013D of the Corporations Act.

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6.5 Limitations of this study

The limitations of this study were outlined in detail in chapter 4. The major limitations are now summarised.

Sample selection was based on a purposive sampling technique. Purposive sampling is a form of non-probability sampling which affects the external validity or generalisability of the research project (Neuman 2000). The sample size was limited due to the availability of Australian listed corporations that satisfied the requirements to appear both on the NPI in the 1999/2000 reporting year and appear on the Connect4 database of annual reports for the financial reporting periods ending 1997 – 2000. This resulted in a sample size of twenty-five corporations. Therefore, conclusions drawn from the results of this study relate to the sample corporations examined and may not reflect the results obtained from the population.

The small sample size, inclusion of non-interval or ratio scaled variables and non-normal distribution of the majority of variables used in the analysis necessitated the use of non-parametric statistical analysis techniques (Bluman 2001; Pagano 2001; Hair, Anderson, Tatham & Black 1998) which are less powerful than parametric tests (Coakes & Steed 1999). Furthermore, the data is based on annual report disclosures from 1997 to 2000 and changes in disclosure practices may have occurred since that time.

As discussed in chapter 4, the use of NPI emission levels in isolation is not a reliable measure of environmental performance. The quantification of emissions does not take into account differences in the impacts of different substances on human health or the environment. This approach was necessary, however, due to a number of factors. First, problems were identified in attempting to provide an accurate toxicity measure (as discussed in section 4.5.4). Second, as stated by Sullivan (1999, p. 368) ‘the primary purpose of the NPI is to provide information

on the quantities of pollutants emitted to the environment' and it is 'not an environmental or public health effects database (nor was it ever intended that this be the case)'. Third, there is evidence that the contextual information provided on the NPI website was insufficient and inadequate (NEPC 2002; Howes 2001). Fourth, the 36 reportable substances for the two NPI reporting periods used in this research were determined from approximately 400 substances. The list of 36 substances on which the NPI emission quantity variable was operationalised were those considered to be of the highest NPI risk score and were 'almost all substances about which there have been major concerns in recent years' (NEPC 1999, p. 25) resulting in minimal differences in toxicity levels between the substances. Finally, it was argued that for the purposes of this research the quantity of pollution emissions disclosed on the NPI may affect the perception of users of that database, being that the greater the quantity published the greater the possible perception of the corporation being a poorer environmental performer. The use of the NPI also permitted comparisons to be undertaken with the research by Patten (2002b) who operationalised environmental performance as the sum of company-specific US TRI emission quantities adjusted by sales-revenue levels.

In order to address the requirements of objective 3, the annual report was used as the sole disclosure medium in this research as s. 299(1)(f) requires disclosure relating to environmental regulation to be provided in the directors' report of the annual report. The use of the annual report as the sole disclosure medium of environmental information has been criticised for ignoring other disclosure instruments that a corporation may use to communicate to users (Unerman 2000); however, it is noted in the research literature that the annual report is a useful instrument for the dissemination of information to stakeholders (Zeghal & Ahmed 1990) and an important source of information to users (Deegan & Rankin 1997; Tilt 1994). It is also suggested that attempting to capture all communications in a wide range of disclosure mediums may be problematic (Zeghal & Ahmed 1990). The majority of previous studies in the environmental disclosure area have focussed on disclosures in annual reports (Unerman 2000) particularly Australian studies (Deegan, Rankin & Tobin 2002; Deegan, Rankin & Voght 2000; Deegan & Gordon 1996; Deegan & Rankin 1996; Gibson & Guthrie 1995; Guthrie & Parker 1989); therefore, the use of annual reports as a disclosure medium also maintained comparability with the existing research.

The category-based content analysis method adopted in this research can result in reduced reliability (Krippendorf 1980). In order to increase the level of reliability a second coder was employed (Holsti 1969). As a consequence reproducibility reliability was targeted to identify

inconsistencies between the results of the two coders. Acceptable levels of reliability were determined using both the coefficient of reliability and Scott's pi.

Words were used as the unit of measurement in this research as the objective of the unit of measurement was to determine quantities of disclosures within and between the sample companies. Use of words has been criticised for decreasing reliability, providing meaningless results and excluding information such as that provided in images (Unerman 2000; Milne & Adler 1999). An important assumption of content analysis (and environmental disclosure research), however, has been that the quantity of disclosures is representative of the importance of the issue being examined (Unerman 2000; Gray, Kouhy & Lavers 1995b; Krippendorff 1980). Therefore, words may be considered to provide greater detail than other units of measurement such as pages, paragraphs or sentences as suggested by Deegan and Gordon (1996); however, in order to maintain meaning, sentences were used as the recording unit for this research in identifying themes and nature of disclosure. The use of sentences has also been criticised for excluding information in images and ignoring the importance of typeface and font size (Unerman 2000). Sentences have, however, been proposed as the preferred recording unit by a number of authors (Milne & Adler 1999; Hackston & Milne 1996; Ingram & Frazier 1980) who suggest that they are less subject to interjudge variation (Ingram & Frazier 1980) and result in higher levels of agreement between multiple coders (Hackston & Milne 1996).

6.6 Future Research

The similar findings of this study using NPI data and those of Patten (2002b) using TRI data may be useful in future studies. The use of pollution emission information may allow increased comparability of environmental disclosure practices and performance on an international basis as the OECD recommended that all member countries adopt a publicly available pollutant release and transfer register system in 1996. The NPI is based on both the OECD recommendations and the TRI. Similar inventories operate in the UK and Canada. The international availability of similar measures of environmental performance also addresses early concerns raised by Ullmann (1985) who suggested that different measures of environmental performance had resulted in inconsistent results between earlier studies.

The finding that voluntary disclosures are highly discretionary compared to the limited scope of mandatory disclosures also needs consideration. Previous research examining voluntary environmental disclosures questioned the reliability (Berthelot, Cormier & Magnan 2003), objectivity (Deegan & Gordon 1996), credibility (Deegan & Gordon 1996; Deegan & Rankin 1996) and usefulness to users (Hughes, Anderson & Golden 2001; Tilt 1994) of those disclosures. In contrast to previous research, this study found that companies required to disclose non-compliance with environmental regulations pursuant to s. 299(1)(f) had no greater propensity to provide greater quantities of voluntary environmental disclosures or positive voluntary environmental disclosures than those not reporting non-compliance. Future research examining the perceptions of corporate environmental performance by users of the annual report, as compared to actual performance, could be undertaken. This could provide empirical evidence of the effect of the voluntary disclosure system on user decision making.

This study examined mandatory disclosures during the early stages of s.299(1)(f), and while it remained subject to repeal. A review of mandatory disclosures in more recent times would be useful to determine whether disclosure practices have altered as reporting in compliance with the section has become established. Also, given the findings relating to the strategic nature of voluntary disclosures, a detailed content analysis of voluntary environmental disclosures relating to non-compliance items reported in the directors' report should be undertaken. This would provide a greater understanding of the potential for voluntary environmental disclosures to limit the usefulness of mandatory disclosures.

As stated in 6.4.1 the sample corporations subject to the requirements of s. 299(1)(f) were subject to the NPI as a potential legitimacy threat simultaneously. Consequently, it was suggested that the insignificant findings relating to objective 3 (in contrast to the significant findings relating to objectives 1 and 2) may have been a result of the NPI being considered a greater threat than s. 299(1)(f) by the sample corporations. Therefore, it is possible that using a different sample of corporations not subject to other legitimacy threats such as the NPI may result in different findings to those in this study.

Future research could also examine whether a mandatory disclosure system may provide more reliable environmental performance information than a voluntary disclosure system. A comparison of the perceptions of environmental performance by users of mandatory disclosures and voluntary disclosures in the annual report would provide a better understanding of the usefulness of mandatory disclosure requirements to stakeholders who

rely on the annual report for making decisions regarding resource allocation to entities. Users perceptions of environmental performance, based on disclosures in each section of the annual report, could then be compared with a measure of actual environmental performance such as ratings provided by the Australian Conservation Foundation's Perceptions report (2001) or more recently those provided by Reputex (see discussion in section 2.7). This would assist in the determination of the reliability of disclosures under each system to users. It would also provide further guidance to policy makers regarding the need, or otherwise, for improvements to mandatory disclosure requirements and/or restrictions on voluntary environmental disclosure practices.

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Appendix A: Australian Environmental Groups

The **Australian Conservation Foundation** (ACF) has worked in cooperation with government, industry and the community since the 1960's. Over the past thirty-five years the ACF has successfully been involved in the prevention of mining and exploration in sensitive areas including Antarctica (1989) and the Great Barrier Reef (1981), the development of national parks such as South West National Park (1968) and Kakadu (1974), and influencing government to sign the World Heritage Convention (1974) and the Nuclear Test Ban Treaty (1995). The ACF includes business and corporations as an important target area of their campaigns (Australian Conservation Foundation 2002). The ACF is a participant in the *Age/Sydney Morning Herald Good Reputation Index* which is an assessment of the top 100 Australian companies and their performance over a range of social, environmental and economic performance areas. The *Index* was first published in 2000 and the ACF contributes by providing an annual *Perception Report* on the environmental performance of the companies considered (Australian Conservation Foundation 2001).

Greenpeace Australia was founded in 1977 while bringing action against a whaling station located in Western Australia and was incorporated in 1987 (http://www.greenpeace.org.au/aboutus/index.html). In 1998 Greenpeace Pacific and Greenpeace Australian combined to become Greenpeace Australia Pacific. Unlike other environmental organisations, a major feature of Greenpeace's activities and mission is a confrontational approach to expand the knowledge of environmental issues internationally. Greenpeace has been notable in its protests against pollution, nuclear waste, the protection of habitat and endangered species, and attention-grabbing techniques including scaling the walls of the Australian Prime Minister's residence, Kirribilli House in 1997.

The **Worldwide Fund for Nature** (WWF) is an apolitical organisation established internationally in 1961. The WWF has been operating in Australia since 1978 and collaborates with business, community and the government to achieve its goals. As with

many environmental groups operating in the 1990's and 2000's, the WWF deems a collaborative approach more useful than the traditional confrontational approach. The WWF produces an Annual Scorecard on Mining Company Environmental Reports prepared by signatories to the Australian Minerals Industry Code for Environmental Management. The Code is voluntary and outlines key principles including reporting obligations. However, it is indicative of the changing attitudes of industries with high environmental impacts.

The **Total Environment Centre** (TEC) was established in 1972 and has been involved in over 100 campaigns since its inception. TEC is a non-profit organization registered under the New South Wales Charities Act funded from donations, trusts and independent projects. (www.tec.org.au/) accessed 17/07/2006. The TEC acts as a support base for environmentalists and community groups in undertaking campaign activities for environmental issues and has been involved in lobbying at local, state and federal levels.

The **National Toxics Network** (NTN) is primarily focused in the areas of pollution reduction, environmental health and justice. The NTN provides support to non-government organizations in areas relating to chemical and toxic issues, including hazardous waste management, at the national and international level. Committee members also sit on a number of national advisory bodies. (www.oztoxics.org) accessed 17/07/2006

Appendix B: NPI Reportable Substance List - Initial Three Reporting Periods

Substance	CASR No.	Threshold Category	Threshold
Acetone	67-64-1	1	10 tonnes per year
Arsenic & compounds	7440-38-2	1	10 tonnes per year
Arsenic & compounds		2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
Benzene	71-43-2	1	10 tonnes per year
Butadiene (vinyl ethylene)	106-99-0	1	10 tonnes per year
Cadmium & compounds	7440-43-9	1	10 tonnes per year
Cadmium & compounds		2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
Carbon monoxide	630-08-0	1	10 tonnes per year
Carbon monoxide		2a	400 tonnes per year, or 1 tonne per hour
Chromium (VI) compounds	7440-47-3	1	10 tonnes per year
Chromium (VI) compounds		2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
Cobalt & compounds	7440-48-4	1	10 tonnes per year
Cyanide (inorganic) compounds	N/A	1	10 tonnes per year
Dibromoethane	106-93-4	1	10 tonnes per year

Dichloromethane	75-09-2	1	10 tonnes per year
Ethoxyethanol	110-80-5	1	10 tonnes per year
Ethoxyethanol acetate	111-15-9	1	10 tonnes per year
Ethylene glycol (1,2-ethanediol)	107-21-1	1	10 tonnes per year
Fluoride compounds	N/A	1	10 tonnes per year
Fluoride compounds		2a	400 tonnes per year, or 1 tonne per hour
Glutaraldehyde	111-30-8	1	10 tonnes per year
Lead & compounds	7439-92-1	1	10 tonnes per year
Lead & compounds		2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
Mercury & compounds	7439-97-6	1	10 tonnes per year
Mercury & compounds		2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
Methanol	67-56-1	1	10 tonnes per year
Methyl ethyl ketone	78-93-3	1	10 tonnes per year
Methyl isobutyl ketone	108-10-1	1	10 tonnes per year
Methyl methacrylate	80-62-6	1	10 tonnes per year
Nickel carbonyl	13463-39-3	1	10 tonnes per year
Nickel carbonyl		2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
Nickel subsulfide	12035-72-2	1	10 tonnes per year
Nickel subsulfide		2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
Oxides of Nitrogen	N/A	2a	400 tonnes per year, or 1 tonne per hour
Particulate Matter 10.0 um (PM10)	N/A	2a	400 tonnes per year, or 1 tonne per hour
Polycyclic aromatic	N/A	2a	400 tonnes per year, or

hydrocarbons			1 tonne per hour
Sulfur dioxide	7446-09-5	1	10 tonnes per year
Sulfur dioxide		2a	400 tonnes per year, or 1 tonne per hour
Sulfuric acid	7664-93-9	1	10 tonnes per year
Tetrachloroethylene	127-18-4	1	10 tonnes per year
Toluene (methylbenzene)	108-88-3	1	10 tonnes per year
Toluene-2,4-diisocyanate	584-84-9	1	10 tonnes per year
Total nitrogen	N/A	3	15 tonnes per year
Total phosphorus	N/A	3	3 tonnes per year
Trichloroethylene	79-01-6	1	10 tonnes per year
Xylenes (individual or mixed isomers)	1330-20-7	1	10 tonnes per year

(Adapted from Department of Environment and Heritage
http://www.npi.gov.au/about/list_of_subst.html)

Appendix C: Listing of Sample Companies

1	AMC	Amcor Limited
2	ANE	Auspine Limited
3	APY	Asia Pacific Specialty Chemicals Limited
4	BRL	BRL Hardy Limited
5	CAA	Capral Aluminium Limited
6	CNG	Central Norseman Gold Limited
7	CPB	Campbell Brothers Limited
8	CSL	CSL Limited
9	CSR	CSR Limited
10	CTR	Centaur Limited
11	EML	Email Limited
12	GNS	Gunns Limited
13	HIL	Hills Industries Limited
14	ICT	Incitec Limited
15	NCM	Newcrest Mining Limited
16	NDY	Normandy Mining Limited
17	NFD	National Foods Limited
18	OCA	Oil Company of Australia Limited
19	PDP	Pacific Dunlop Limited
20	RSG	Resolute Limited
21	STO	Santos Limited
22	WEG	George Weston Foods Limited
23	WJM	Joe White Maltings
24	WMT	Western Metals Limited
25	WOW	Woolworths Limited

Appendix D: Tests of Normality - Stem and Leaf Plots

Voluntary environmental disclosures words 1997

```
 Frequency    Stem &  Leaf

    12.00        0 .  000000223448
     4.00        1 .  0123
     1.00        2 .  6
      .00        3 .
     2.00        4 .  29
     2.00        5 .  23
     2.00        6 .  77
     2.00 Extremes    (>=1443)

 Stem width:    100.00
 Each leaf:       1 case(s)
```

Voluntary environmental disclosures words 1998

```
 Frequency    Stem &  Leaf

    13.00        0 .  0000000013569
     3.00        1 .  246
      .00        2 .
     2.00        3 .  22
     1.00        4 .  6
     1.00        5 .  4
     2.00        6 .  36
     1.00        7 .  0
     1.00        8 .  7
     1.00 Extremes    (>=1260)

 Stem width:    100.00
 Each leaf:       1 case(s)
```

Voluntary environmental disclosures words 1999

```
 Frequency    Stem &  Leaf

    13.00        0 .  0000000000001
     2.00        0 .  22
     2.00        0 .  45
     2.00        0 .  67
     4.00        0 .  8899
     1.00        1 .  1
      .00        1 .
      .00        1 .
      .00        1 .
     1.00        1 .  8

 Stem width:   1000.00
 Each leaf:       1 case(s)
```

Voluntary environmental disclosures words 2000

```
 Frequency    Stem &  Leaf

    10.00        0 .  0000000111
     4.00        0 .  2333
     3.00        0 .  444
     3.00        0 .  666
     2.00        0 .  88
     1.00        1 .  1
     2.00        1 .  33

 Stem width:   1000.00
 Each leaf:       1 case(s)
```

Positive voluntary environmental disclosures words 1997

```
 Frequency    Stem &  Leaf

    12.00        0 .  000000223448
     4.00        1 .  0013
     1.00        2 .  4
     1.00        3 .  5
     1.00        4 .  1
     4.00        5 .  0258
     2.00 Extremes    (>=1426)

 Stem width:    100.00
 Each leaf:       1 case(s)
```

Positive voluntary environmental disclosures words 1998

```
Frequency    Stem &  Leaf

   13.00        0 .  0000000001356
    3.00        1 .  226
    1.00        2 .  8
    1.00        3 .  2
    3.00        4 .  458
    2.00        5 .  24
     .00        6 .
    1.00        7 .  0
    1.00 Extremes    (>=1144)

Stem width:    100.00
Each leaf:       1 case(s)
```

Positive voluntary environmental disclosures words 1999

```
Frequency    Stem &  Leaf

   14.00        0 .  00000000000011
    2.00        0 .  22
    1.00        0 .  4
    5.00        0 .  67777
    2.00        0 .  89
     .00        1 .
     .00        1 .
     .00        1 .
    1.00        1 .  7

Stem width:   1000.00
Each leaf:       1 case(s)
```

Positive voluntary environmental disclosures words 2000

```
Frequency    Stem &  Leaf

   10.00        0 .  0000000111
    5.00        0 .  23333
    4.00        0 .  4455
    2.00        0 .  67
    1.00        0 .  8
    2.00        1 .  01
    1.00        1 .  3

Stem width:   1000.00
Each leaf:       1 case(s)
```

Size adjusted NPI emissions (kilograms) 1998-1999

```
 Frequency    Stem &  Leaf

    15.00        0 .  000000000000002
     2.00        0 .  57
     4.00        1 .  1122
     1.00        1 .  5
     1.00        2 .  4
     2.00 Extremes    (>=5.2)

 Stem width:      1.00
 Each leaf:       1 case(s)
```

Size adjusted NPI emissions (kilograms) 1999-2000

```
 Frequency    Stem &  Leaf

    14.00        0 .  00000000001111
     2.00        0 .  33
     3.00        0 .  445
     1.00        0 .  7
      .00        0 .
      .00        1 .
     1.00        1 .  3
     4.00 Extremes    (>=21)

 Stem width:     10.00
 Each leaf:       1 case(s)
```

Voluntary emission disclosures words 1997

```
 Frequency    Stem &  Leaf

    14.00        0 .  00000000000000
     3.00        0 .  333
      .00        0 .
     2.00        0 .  77
      .00        0 .
      .00        1 .
     2.00        1 .  22
     1.00        1 .  5
     3.00 Extremes    (>=211)

 Stem width:    100.00
 Each leaf:       1 case(s)
```

Voluntary emission disclosures words 1998

```
 Frequency    Stem &  Leaf

    15.00        0 .  000000000000001
      .00        0 .
     2.00        0 .  55
     1.00        0 .  6
     1.00        0 .  8
      .00        1 .
     1.00        1 .  2
     1.00        1 .  4
     3.00        1 .  777
     1.00 Extremes    (>=405)

 Stem width:    100.00
 Each leaf:       1 case(s)
```

Voluntary emission disclosures words 1999

```
 Frequency    Stem &  Leaf

    15.00        0 .  000000000000000
     1.00        0 .  3
      .00        0 .
     3.00        0 .  666
      .00        0 .
     1.00        1 .  1
     5.00 Extremes    (>=195)

 Stem width:    100.00
 Each leaf:       1 case(s)
```

Voluntary emission disclosures words 2000

```
 Frequency    Stem &  Leaf

    12.00        0 .  000000000013
     3.00        0 .  589
     4.00        1 .  0134
     1.00        1 .  9
     2.00        2 .  00
     2.00        2 .  56
     1.00        3 .  4

 Stem width:    100.00
 Each leaf:       1 case(s)
```

Voluntary words NPI 1997

```
 Frequency    Stem &  Leaf

     3.00        0 .  000
      .00        0 .
      .00        1 .
      .00        1 .
      .00        2 .
      .00        2 .
     1.00        3 .  4

 Stem width:        10
 Each leaf:       1 case(s)
```

Voluntary words NPI 1998

```
 Frequency    Stem &  Leaf

     3.00        0 .  000
      .00        0 .
      .00        0 .
      .00        0 .
      .00        0 .
      .00        1 .
      .00        1 .
      .00        1 .
      .00        1 .
     1.00        1 .  9

 Stem width:        10
 Each leaf:       1 case(s)
```

Voluntary words NPI 1999

```
 Frequency    Stem &  Leaf

    21.00        0 .  000000000000000000000
     4.00 Extremes    (>=41)

 Stem width:        10
 Each leaf:       1 case(s)
```

Voluntary words NPI 2000

```
 Frequency    Stem &  Leaf

     3.00        0 .  000
      .00        1 .
      .00        2 .
      .00        3 .
      .00        4 .
      .00        5 .
      .00        6 .
     1.00        7 .  3

 Stem width:        10
 Each leaf:       1 case(s)
```

Appendix E: Tests of Normality - Shapiro-Wilks Statistic

Disclosure variable	*Shapiro-Wilk*		
	Statistic	*Df*	*Sig.*
Voluntary environmental disclosures words1997	.703	25	.010
Voluntary environmental disclosures words 1998	.783	25	.010
Voluntary environmental disclosures words 1999	.792	25	.010
Voluntary environmental disclosures words 2000	.877	25	.010
Size adjusted NPI emissions (kilograms) 1998-1999	.616	25	.000
Size adjusted NPI emissions (kilograms) 1999-2000	.644	25	.000
Positive voluntary environmental disclosure words 1997	.686	25	.000
Positive voluntary environmental disclosure words 1998	.774	25	.000
Positive voluntary environmental disclosure words 1999	.768	25	.000
Positive voluntary environmental disclosure words 2000	.881	25	.000
Voluntary emission disclosures words 1997	.599	25	.000
Voluntary emission disclosures words 1998	.672	25	.000
Voluntary emission disclosures words 1999	.666	25	.000
Voluntary emission disclosures words 2000	.837	25	.001
Voluntary words NPI 1997	.206	25	.010
Voluntary words NPI 1998	.206	25	.010
Voluntary words NPI 1999	.460	25	.010
Voluntary words NPI 2000	.631	25	.010

Appendix F: Descriptive Discussion of NPI Disclosures

During the four-year period only three companies provided a table of emissions in the annual report. One mining company included a table for the years 1997–1999 inclusive. The table included seven environmental statistics including carbon dioxide and sulphur dioxide emissions. The same statistics were used each year and each table included changes in five reporting periods. In 1999 the company's carbon dioxide and sulphur dioxide emissions per tonne increased from the 1998 figures. No table was provided in the 2000 report (the first year of publication of the NPI database).

Two other companies, one from the mining industry in 1999 and the other from the chemical industry in 2000, provided tables of emission related information in their annual reports. The company which provided a table in 1999 included two emission/pollutant related indicators both of which showed a favourable reduction over several years. There is no explanation, however, as to why the water pollutants indicator only covers the years 1997 to 1999, whereas the greenhouse emissions indicator includes the year 1990, and then all years from 1993 to 1999 inclusive. Of the nine indicators used in the table overall[96], seven suggest a favourable result for the company.

The company which included a table in 2000 included two indicators: "liquid effluent — pollutant liquid" which reduced from 374 tonnes in 1996 to 185 tonnes in 2000; and "waste to landfill" which reduced from 1928 tonnes in 1996 to 213 tonnes in 2000. The company's decision to only focus on these indicators is not explained although the two indicators chosen are favourable to the company's image. Differences in what each company has chosen to include in the annual report make comparability between companies difficult.

[96] The table includes lost time due to injuries, waste and resource consumption indicators.

Incitec Limited was the only company to mention the NPI in the 1997 annual report[97]. This was the only year the NPI was mentioned by Incitec. The company stated that:

> On the positive side, we successfully embraced a wide range of regulatory initiatives into our management and cost structure, the National Pollutant Inventory, Hazardous Substance Regulations and new Queensland legislation being just three examples.

In 1999 Amcor Limited included in its voluntary environment section of the company annual report a description of the NPI, including a reference to it being located on the Internet:

> Preparations are complete for complying with the company's obligations under Australia's National Pollutant Inventory (NPI). The NPI is an internet database being cooperatively implemented by the Commonwealth, State and Territory governments. It is designed to provide the community, industry and government with information on the types and amounts of certain chemicals being emitted to the environment.

Pollution emissions for Amcor Limited were also published on the NPI in the 1999 year. Amcor Limited did not make reference to the NPI in any of the other reporting years.

Newcrest Limited discussed the NPI in both the 1999 and 2000 annual reports. In 1999 Newcrest described the NPI as:

> [the] National Pollutant Inventory (NPI) measure came into effect on 1 July 1998. The NPI is Australia's national database of pollutant emissions. Newcrest is now liable to estimate and report the emissions of 36 designated substances where these exceeded predefined thresholds. Newcrest has been working with environmental consultants to determine our commitments under the NPI measure.

In 2000 Newcrest removed the definition of the NPI and referred only to compliance stating:

> Newcrest submitted data to the National Pollutant Inventory (NPI) on those of the 36 designated substances that exceed predefined thresholds. We worked with industry bodies to address specific concerns relating to the estimation of cyanide and particulate emissions.

[97] Incitec Ltd mentioned the NPI in the annual report even though the first NPI database was not published until January 2000.

Capral Limited increased the quantity of voluntary environmental disclosures extensively between 1997 and 1999 but reduced the quantity in the 2000 annual report. Voluntary environmental disclosures in 1997 numbered 124 words and referred to smelter emissions, in particular those relating to its Kurri Kurri Smelter, which was the subject of EPA court action in early 1998, greenhouse gas reductions and the 'Company's mass emissions' taskforce'. In 1998, corresponding with Capral's first reporting year on the NPI, the number of voluntary environmental disclosures increased to 543 words. Again, the majority of disclosures refer to emissions and the company's handling of those emissions. Mention of the NPI is limited to 'We are also establishing guidelines for reporting of releases to air in line with the National Pollutant Inventory development.' In 1999, 410 words are disclosed voluntarily with most referring to emissions. The company includes a table in the annual report that shows levels of water consumption, water pollutants, non-hazardous waste, recycled waste and greenhouse emissions. In 2000 the quantity of voluntary environmental disclosures is reduced to 153 words. Discussion still focuses on environmental performance relating to emissions.

> The Smelter's environmental performance during the year was also good. Fluoride emission levels were consistently below licence conditions. As well, a quantity of accumulated carbon dust was collected and disposed of at Coopers Mills in Victoria, a process that required rigorous environmental approvals from regulators in both New South Wales and Victoria.

In 1999 CSL disclosed information on the NPI for the first time in its voluntary sections of the annual report. In describing the NPI CSL stated that:

> The Australian National Pollutant Inventory, coordinated by the Federal Government, requires all major manufacturing operations to report on atmospheric emissions for certain specified chemicals. In this regard, CSL's only requirement is to report on combustion products from our natural gas boilers.

Disclosure in the 2000 annual report was similar except the last sentence was slightly modified to read 'CSL reports on combustion products from our natural gas boilers, our only requirement in this regard'.

Normandy Limited preceded its discussion on the NPI in the 1999 annual report with a discussion on its involvement in the Greenhouse Challenge programme. Describing the company as 'a participant in this voluntary programme' it states:

> …participation in the Greenhouse Challenge will result in the reduction of its energy consumption and greenhouse gas emissions by more than 15 percent…Australia's Greenhouse Challenge programme is recognised as one of the most successful voluntary programmes in the world.

Normandy Limited's discussion on the NPI states:

> Normandy has committed to the National Pollutant Inventory, a Federal Government initiative to provide Australians with information about emission levels. Subsequently, the Company will be required to report emissions. Systems for reporting are being developed. It is envisaged the inventory will assist Normandy to identify pollutant emissions and set reduction targets.

This statement is followed by a section discussing the funding of research programmes into improvements in the use of and disposal of pollutants in the environment.

In the Normandy 2000 annual report the discussion includes a reference to the availability of the NPI on the internet:

> Normandy reports emissions to the National Pollutant Inventory (NPI), a public, internet based database established to provide information about the types and amounts of substances emitted [sic] to the environment. Normandy believes the NPI will assist it to continue to be a responsible operator, accountable to local communities.

The discussion in the 2000 annual report is immediately followed by sections on the Greenhouse Challenge, and new initiatives in tailings risk assessment and sodium cyanide management.

CSR Limited directs the reader of the 2000 annual report to its own emission data on the CSR website. The paragraph on the NPI is immediately preceded by a paragraph outlining the environmental awards the company has received.

> INTERNET SITE CSR's internet site now has an environment section, which includes a range of emission data that we report to the Australian Federal Government's National Pollutant Inventory. The address is www.csr.com.au/environment

This is followed by a brief account of environmental incidents and a list of environmental performance targets for the future. The website includes a section on the NPI which outlines the emissions of each of its operating companies, details of the products manufactured, number of employees at each site, mandatory requirements such as licensing by the EPA, and a section on pollution control/management for each site (CSR Limited 2003). There is no link provided to the official Environment Australia NPI website.

Appendix G: Descriptive Discussion of s. 299(1)(f) Disclosures

The approach adopted in reporting pursuant with the requirements of s. 299(1)(f) differed between the sample corporations. As displayed in Table 28 a number of companies reported non-compliance with environmental regulations or breaches of environmental regulation in:

- the directors' report;
- the directors' report and the voluntary section of the annual report; or
- the voluntary sections of the annual report but not in the directors' report.

Reporting non-compliance in the voluntary sections as opposed to the directors' report may be due to a number of factors including the timing of the breach, interpretation of "significant", and the appropriate location of the details on breaches of regulation by the companies.

Centaur Limited provided environmental disclosures in both the directors' and voluntary sections of the 1999 annual report but only disclosed incidents of non-compliance in the voluntary section:

> During 1998/1999, environmental data was recorded and reported (internally and externally to Statutory Authorities as required) on environmental incidents and compliance. The number of outstanding incidents of non-compliance recorded at Mt Pleasant increased as environmental reporting was standardised. Measures to rectify outstanding incidents of non-compliance have been agreed with the relevant Authorities and time frames set for remedial action. Progress is monitored and reported on a continuing basis.

The voluntary disclosure was included within discussion on positive aspects of the company's environmental performance and activities to improve performance. Mandatory disclosure, however, was limited to a statement of compliance. The company appeared to interpret s.

299(f)(f) as a requirement to only disclose those breaches that were *current* at balance date in the directors' report as opposed to those which occurred throughout the reporting period:

> The Company has provided in the Environment and Community section of this Annual Report a detailed report on the Company's Environmental and Land Management policies and practices. In accordance with Section 299(1) of the Corporations Law, the Company reports that it has complied with all environmental requirements of the licences and work approvals held and, **at the date of this Report** [emphasis added], is not in any breach of any environmental law relating to its operations.

As with several other companies who opted for standardised reporting from year to year, Centaur provided the same statement in the directors' report in 2000.

Some companies such as Newcrest Mining Limited appeared to interpret "significant" as "material". While Newcrest's s. 299(1)(f) disclosure in 1999 was quite detailed, including a table of incidents at different levels, the disclosure concludes with 'the Directors are not aware of any environmental matter which would have a materially adverse impact on the overall business of the Consolidated Entity'.

Another disclosure approach was reporting breaches in both the voluntary and mandatory sections of the annual report with supporting information provided with the voluntary disclosures. Incitec Limited provides the following in the 2000 directors' report:

> Thirteen company sites, including all major locations, are covered by environmental licences issued under relevant State legislation. Licences impose conditions on the operations of facilities, including limits on emissions to atmosphere, liquid emissions, noise and dust.
>
> The company operates a comprehensive testing and reporting regime to monitor compliance with licence requirements, which embraces an extensive range of licence condition parameters. Over a year, approximately 13,000 individual monitoring tests are undertaken and during 2000, compliance performance was 99.8%.
>
> During the year the company was fined $25,000 by the New South Wales Land and Environment Court in connection with an accidental release of nitric acid at its Kooragang Island site in March 1999. The company was also fined $25,000 in relation to a prosecution commenced in the prior financial year in connection with an accidental

> release of ammonia from the Kooragong Island site. The company has taken corrective action to ensure neither incident is repeated.

The same information is provided in the voluntary section of the annual report, although the disclosure is dissected by the following positive details:

> Some of the highlights of the company's environmental performance during the year were:
>
> - winning the 2000 Plastics and Chemicals Industries Association Environment Award;
> - increased focus on community involvement and awareness, with major sites at Gibson Island and Brendale in Queensland and Kooragang Island in New South Wales establishing community involvement programs that are recognised by community groups as being innovative and open, and are a key element in improving the relationship of trust in each of the communities in which Incitec operates;
> - entering into a Co-operative Agreement with the Australian Greenhouse Office to participate in the Commonwealth's Greenhouse Challenge Program;
> - entering into a Healthy Waterways Agreement with the Brisbane City Council and reducing waste water discharge from the company's Gibson Island site into the Brisbane River by more than 90%;
> - achieving ISO 14001 (Environmental Management Systems) certification of the company's logistics operations in North Queensland, becoming the only fertilizer company in Australia to obtain such certification;
> - continued research into environmental issues such as greenhouse gas emissions, water management and energy use to facilitate the continued improvement of the company's environmental performance.

There also appears some confusion as to whether referring the reader to the voluntary section of the annual report is sufficient for compliance. For example the CSR 1999 annual report includes in its voluntary disclosures a section titled “Environmental incidents” which discusses breaches of environmental regulation and refers to the material effect of breaches. Within this section it is stated that:

> CSR's 644 operating sites are subject to many environmental laws and regulations and must comply with numerous environmental licence requirements. We believe that we are in substantial compliance with these.

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> However, we dealt with 217 environmental incidents last year, compared with 369 the previous year. We now report environmental incidents based on five levels: 1 minor, 2 significant, 3 serious, 4 severe and 5 extreme. The incidents in the past year were mostly level 1 or level 2 breaches of compliance, but included 36 level 3 breaches: 22 in Australia and 14 in the USA. There were no level 4 or 5 incidents.
>
> The pie chart (opposite) shows the nature of level 3 breaches. Relevant environmental authorities were notified of all of these incidents. The main issues the group faces include process and storm water management, boiler stack emissions, dust and noise control, spills of liquids, as well as some contamination issues on sites, especially those bought more than a decade ago.
>
> The CSR Group is not aware of any environmental issues which would have a material adverse impact on our business as a whole.

The discussion is immediately followed by another voluntary section on environmental protection. In contrast, CSR's compliance with s. 299(1)(f) comprises a single sentence and is provided in the directors' report under the heading of "environmental performance" and simply states that 'the CSR Group's performance in relation to environmental regulation is reviewed on pages 26 and 27'. Therefore, referring users back to the voluntary environmental disclosures including both non-compliance and environmental protection sections.